1995–97 BULLETIN of the UNIVERSITY of RHODE ISLAND

UNDERGRADUATE and GRADUATE STUDIES



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UNIVERSITY OF RHODE ISLAND KINGSTON, RI 02881 401-792-1000

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1995-96 CALENDAR

First Semester

August 21–September 5
Registration period, College of
Continuing Education (CCE)

August 28–September 1
Registration period, Kingston Campus

September 4, Monday Holiday, Labor Day

September 5, Tuesday
Orientation and academic advising for
new Kingston undergraduate
students

September 6, Wednesday Classes begin, Kingston Campus and CCE

September 15, Friday
Final day for undergraduate students
to drop courses designated
"early drop"

September 19, Tuesday
Final day to add courses and to
add P-F option
Fees will not be adjusted downward for
Kingston Campus courses dropped

October 9, Monday Holiday, Columbus Day

after this date.

October 10, Tuesday Monday classes meet

October 23, Monday
Midsemester
Final day to drop courses and to
change from P-F option to grade

November 13, Monday Holiday, Veterans Day

November 22, Wednesday Thanksgiving recess begins, 8 a.m.

November 27, Monday Classes resume, 8 a.m.

December 12, Tuesday Classes end, Kingston Campus

December 13, 16 Reading days, Kingston Campus

December 14–15, 18–21 Final examinations, Kingston Campus

December 19, Tuesday CCE classes, examinations end

December 27, Wednesday Final grades due in the Office of the Registrar, 4 p.m.

Second Semester

January 3–16 Registration period, CCE

January 8–12
Registration period, Kingston Campus

January 15, Monday Holiday, Martin Luther King's Birthday

January 16, Tuesday
Orientation and academic advising for new Kingston undergraduate students

January 17, Wednesday
Classes begin, Kingston Campus and CCE

January 26, Friday
Final day for undergraduate students to
drop courses designated "early drop"

January 30, Tuesday
Final day to add courses and to
add P-F option
Fees will not be adjusted downward for
Kingston Campus courses dropped
after this date.

February 19, Monday Classes will not meet

February 21, Wednesday Monday classes meet March 6, Wednesday
Midsemester
Final day to drop courses and to
change from P-F option to grade

March 18, Monday Spring recess begins, 8 a.m.

March 25, Monday Classes resume, 8 a.m.

May 1, Wednesday Classes end, Kingston Campus

May 2, 4–5 Reading days, Kingston Campus

May 3, 6–10 Final examinations, Kingston Campus

May 8, Wednesday CCE classes, examinations end

May 13, Monday Final grades due in the Office of the Registrar, 4 p.m.

May 18, Saturday Graduate Commencement

May 19, Sunday Undergraduate Commencement

Summer Session 1996

May 20-June 21 First five-week session

June 24–July 26 Second five-week session

Changes in the academic calendar due to major storms, labor unrest, or other circumstances may be made when it is in the best interests of the institution, and without prior notice to the students.

This calendar applies to undergraduate and graduate students enrolled at Kingston and CCE. For dates specific to graduate degree candidates, see pages 104–105.

lege of Agriculture and Mechanic Arts in 1892, and the first class of 17 members was graduated two years later.

The Morrill Act of 1862 provided for the sale of public lands. Income from these sales was to be used to create at least one college in each state with the principal purpose of teaching agriculture and mechanic arts. From this grant of land comes the term "land grant," which applied to the national system of state colleges. In a later adaptation of the concept, federal funds given to colleges for marine research and extension are called "sea grants."

In 1909 the name of the college was changed to Rhode Island State College, and the program of study was revised and expanded. In 1951 the college became the University of Rhode Island by an act of the General Assembly. The Board of Governors for Higher Education appointed by the governor became the governing body of the University in 1981. A historical outline can be found in the Appendix.

Programs of Study

Undergraduate Study. All programs aim at a balance of studies of the natural and social sciences, the humanities, and professional subjects. The courses and programs of study have been approved by national accrediting agencies and are accepted for credit by other approved institutions of higher education (see "Accreditation," page 9).

Undergraduate students can earn the following degrees:

Bachelor of Arts
Bachelor of Science
Bachelor of Fine Arts
Bachelor of Landscape Architecture
Bachelor of Music
Bachelor of General Studies
(College of Continuing Education only)

All freshmen who enter the University to earn a bachelor's degree are first enrolled in University College. Undergraduates have a wide choice of programs from which to choose a major, and the advising program in University College provides

help in making this decision and in choosing appropriate courses.

Graduate Study. Graduate study at the University was inaugurated in 1907 with Master of Science degrees in chemistry and engineering. The Master of Arts degree was first awarded in 1951, and in 1960 the University awarded its first Doctor of Philosophy degree. Graduate work for professional degrees was initiated in 1962, when the degree of Master of Public Administration was first awarded. Today, the master's degree is offered in 56 areas of study and the doctorate in 37 areas. To date, over 15,000 master's degrees and 1,700 doctoral degrees have been conferred. Students may earn the following degrees:

Master of Arts
Master of Science
Master of Business Administration
Master of Community Planning
Master of Library and Information Studies
Master of Marine Affairs
Master of Music
Master of Public Administration
Doctor of Philosophy

The Dean of the Graduate School has primary responsibility for administering policies and procedures relating to advanced study at the University of Rhode Island. Graduate School policy is formulated by graduate faculty members, acting through their delegate body, the Graduate Council, which includes student members. Only the Dean or the Graduate Council can grant exceptions to the regulations for graduate study, which are explained in detail in the section "Graduate Programs."

The University graduate programs of study are listed on page 6. Work in a combination of special areas is often possible. Graduate-level course work applicable to a number of these programs is offered in several locations throughout the state by the College of Continuing Education. In most cases, however, a portion of the courses must be taken on the Kingston Campus.

Students with a bachelor's degree from this University or from another university with equivalent requirements and accreditation may be admitted for graduate study, providing that their credentials meet the standards set by the Graduate School and by the department in which they wish to study, and that facilities for study are available in their field of interest. Among the standards required for admission are an approximate undergraduate average of B or better and, where required, satisfactory scores on a nationally administered examination.

Research Resources

University Libraries. The library collection of 1,058,000 bound volumes and 1,380,000 microforms is housed in the University Library in Kingston, at the College of Continuing Education in Providence, and in the Pell Marine Science Library on the Narragansett Bay Campus. The latter was designated the National Sea Grant Depository in 1971.

The University Library, which holds the bulk of the collection, has open stacks that provide direct access to books, periodicals, documents, maps, microforms, and audiovisual materials. The Special Collections Department collects and maintains rare books, manuscripts, the University archives, and a variety of special interest materials. Service hours at the other libraries vary, but the University Library provides full reference, bibliographic, and circulation services during most of the 90 hours a week it is open.

The University is a member of the Higher Education Library Information Network (HELIN), which extends borrowing privileges to the faculty, staff, and students of the Community College of Rhode Island, Providence College, Rhode Island College, Roger Williams University, and the University of Rhode Island. Holdings of all these libraries are included in the on-line public access catalog.

Academic Computer Center. The Academic Computer Center (ACC) provides computational resources needed by the University community for instruction and research. Located in Tyler Hall on the Kingston Campus, the ACC maintains cen-

lege of Agriculture and Mechanic Arts in 1892, and the first class of 17 members was graduated two years later.

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Undergraduate Degrees

College of Arts and Sciences Anthropology: B.A. Applied Quantitative Economics: Applied Sociology: B.S. Art: B.A., B.F.A. Biology: B.A. Botany: B.S. Chemistry: B.A., B.S. Chemistry and Chemical Oceanography: B.S. Classical Studies: B.A. Clinical Laboratory Science: B.S. Communication Studies: B.A. Comparative Literature: B.A. Computer Science: B.S. Economics: B.A. English: B.A. French: B.A. Geology: B.A., B.S. Geology and Geological Oceanography: B.S. German: B.A. History: B.A.

Linauistics: B.A. Marine Affairs: B.A. Mathematics: B.A., B.S. Microbiology: B.S. Music: B.A., B.Mus. Philosophy: B.A. Physics: B.A., B.S. Physics and Physical Oceanography: B.S. Political Science: B.A. Psychology: B.A. Russian: B.A. Sociology: B.A. Spanish: B.A. Statistical Science: B.S. Theatre: B.A., B.F.A. Urban Affairs: B.A. Women's Studies: B.A. Zoology: B.S.

College of Business Administration Accounting: B.S. Finance: B.S. General Business Administration: B.S. Home Economics: B.S. Management: B.S. Management Science and Information Systems: B.S. Marketing: B.S.

College of Engineering Biomedical Electronics Engineering: B.S.* Chemical Engineering: B.S. Chemical and Ocean Engineering: B.S. Civil Engineering: B.S. Computer Engineering: B.S. Electrical Engineering: B.S. Industrial Engineering: B.S. Materials Engineering: B.S. Mechanical Engineering: B.S. Ocean Engineering: B.S.

College of Continuing Education Bachelor of General Studies: B.G.S.

College of Human Science and Services Communicative Disorders: B.S. Consumer Affairs: B.S. Dental Hygiene: B.S. Education (Elementary and Secondary): B.S. Human Development and Family Studies: B.S. Human Science and Services: B.S. Physical Education: B.S.

Textiles, Fashion Merchandising, and Design: B.S. Textile Marketing: B.S.

College of Nursing Nursing: B.S.

College of Pharmacy Pharmacy: B.S. (five years) Pharm.D. (six years)

College of Resource Development Animal Science and Technology: Aquaculture and Fishery Technology: B.S. Dietetics: B.S. Environmental Management: B.S. Food Science and Nutrition: B.S. Landscape Architecture: B.L.A. Plant Science: B.S. Resource Economics and Commerce: B.S. Soil and Water Resources: B.S. Urban Affairs: B.S. **Urban Horticulture and Turfgrass** Management: B.S. Wildlife Biology and Management: B.S.

Latin American Studies: B.A. Graduate Degrees

Italian: B.A.

lournalism: B.A.

Master of Arts Audiology Comparative Literature Education English French History Marine Affairs Philosophy* Political Science Spanish Speech-Language Pathology

Master of Science

Accounting **Applied Pharmaceutical Sciences** Audiology Biochemistry Botany Chemical Engineering Chemistry Civil and Environmental Engineering Clinical Laboratory Science Computer Science Electrical Engineering Entomology

Fisheries, Animal and Veterinary

Food Science and Nutrition Human Development and Family Studies

 Human Development and **Family Studies**

 Marriage and Family Therapy College Student Personnel

Labor and Industrial Relations Manufacturing Engineering

Mathematics

Mechanical Engineering and Applied Mechanics

Medicinal Chemistry Microbiology

Natural Resources

Nursing

Ocean Engineering

Oceanography

Pharmacognosy

Pharmacology and Toxicology

Pharmacy Administration

Physical Education

Physical Therapy

Physics

Plant Science

Psychology (School)

Resource Economics

Speech-Language Pathology

Statistics

Textiles, Fashion Merchandising, and Design Zoology

Doctor of Philosophy Applied Mathematical Sciences

- Applied Mathematics
- Applied Probability
- Computer Science
- Operations Research
- Statistics

Biological Sciences

- Biochemistry
- Botany
- Fisheries, Animal and Veterinary Science
- Food Science and Nutrition
- Microbiology
- Natural Resources
- Plant Science
- Zoology

Business Administration Chemical Engineering Chemistry

Civil and Environmental Engineering

Education

Electrical Engineering

English

Industrial and Manufacturing Engineering

Mathematics

Mechanical Engineering and Applied Mechanics

Nursing

Ocean Engineering Oceanography

Pharmaceutical Sciences

- Applied Pharmaceutical Sciences
- Medicinal Chemistry
- Pharmacognosy
- Pharmacology and Toxicology

Physics

- Psychology Clinical
 - Experimental
 - School

Resource Economics

Professional Degrees

Master of Business Administration (M.B.A.) Master of Community Planning

(M.C.P.)

Master of Library and Information Studies (M.L.I.S.) Master of Marine Affairs (M.M.A.)

Master of Music (M.M.) Master of Public Administration

(M.P.A.)

Science

tral computing facilities, student microcomputing resources, and the campus high-speed network. The ACC provides a variety of services to support these facilities and assists the campus community in their use. The computer network and related services have been expanding steadily since the center opened in 1959, and now a majority of the students, faculty, and staff use these resources. All students are entitled to a computer account which enables them to use ACC facilities, including access to worldwide electronic mail services.

The center has an IBM ES/9000 Model 210 VF mainframe computer running the VM/CMS operating system to provide computing support for interactive, batch, and client-server processor modes. A full complement of programming languages and packages is available. In addition, an IBM RISC System/6000 Power Server 560 running AIX 3.2.5 is available for Geographic Information System and computerintensive applications. Extensive facilities for computer graphics are also offered using both video display facilities and a CalComp 58436 color electrostatic plotter for visualization. Several hundred personal computers, workstations, and terminals are located in public work areas and private offices. These devices are connected to the University Ethernet network, which provides access to the ACC systems and remote independent computers. Also available are extensive dial-up facilities as well as external network access to the Internet, Bitnet, and the Rhode Island State Network. URI is also a Smart Node member of the Cornell National Supercomputer Facility, with both research and educational access to supercomputer facilities.

The ACC provides facilities management services for campus microcomputer laboratories featuring IBM PS/2s, Apple Macintoshes, and UNIX workstations. Numerous software application packages are available. The microcomputer laboratories are available for faculty research, teaching, and general student use. Eight computer classrooms are available.

Other Research Facilities. The Department of Computer Science and Statistics operates both research activities and instruction within the department. At present, this facility includes a classroom equipped with 36 Macintosh computers and another classroom with 12 SUN workstations. Additional SUN workstations and Macintoshes are located in faculty and graduate student offices. All of the equipment is interconnected by a local area network. The Narragansett Bay Campus has a Prime 750 and a Micro-vax II for timesharing use, an educational computer laboratory with nine Macintosh computers, two DOS machines, two SUN workstations, and a high-speed data link to the Academic Computer Center.

The College of Engineering has a SUN Sparc Server 1000 supporting 17 SUN Sparc 5 workstations; two DECsystems 5000/200 RISC Ultrix servers: 75 IBM-compatible PCs (286 and 486); and terminals in all engineering buildings. These and all other departmental computers are linked together by the Ethernet network. The Department of Electrical Engineering has a SUN 4/490 SPARC server, 42 SUN and DEC UNIX workstations, and a variety of PCs and Macintoshes. The Department of Civil and Environmental Engineering has a VMS cluster of four VAXstation 3100 graphics workstations and a Novell network of eight IBM PCs. The Department of Chemistry has a VAX 4000/200 VMS minicomputer, one HP and three DEC UNIX workstations, 20 IBM-compatible PCs, and six Macintoshes.

Other equipment includes major laboratories for digital pattern recognition and digital image processing, computer automation ("robotics"), optical properties of materials and microelectronics, materials research, a mechanical properties testing facility, including an Instron 1125, several MTS Servohydraulic testing machines and a NETZSCH thermal analyzer, a field station for radiopropagation research, and reverberant and anechoic rooms for airborne acoustics work.

Equipment available for marine research includes chambers for leak-testing equipment prior to deep-sea use, marine geotechnical laboratory facilities for sediment testing, a wave and towing tank, underwater acoustics test facilities, a 12,000-square-foot research aquarium, a marine ecosystem laboratory, and an oceanographic remote-sensing laboratory that processes sea surface data. The University also operates the Ocean Mapping Development Center for mapping the sea floor.

The University's research vessel, Endeavor, operated by the Graduate School of Oceanography, is a 184-foot ship capable of working in all parts of the world's oceans. It can carry a scientific party of 16. Also part of the fleet are a 59-foot, highspeed ocean research vessel, the Lauri Lee, and a 65-foot ocean engineering vessel, the West Passage, which has equipment for imaging and sampling the sea bed. The University fisheries school operates a 52foot-long training vessel, the Cap'n Bert. A number of smaller vessels are also available. In addition, the Graduate School of Oceanography has a fully equipped research diving facility.

A research reactor and associated facilities are available to University students at the Rhode Island Nuclear Science Center, located on the Narragansett Bay Campus. Constructed and operated by the state of Rhode Island, this critical reactor is extensively used for research by many departments of the University. The reactor, designed for 5 MW, is now operating at 2 MW. Hot laboratories, counting equipment, neutron spectrometers (including a unique polarized-beam, small-angle instrument), and multichannel analyzers are also available.

The College of Nursing has practice laboratories equipped with a heart-sound simulator used by students in primary health care. The media center at White Hall contains various types of learning modules and microcomputers for research and instruction.

Housed in the Morrill Science Building, the URI Central Electron Microscope Facility has a JEOL 1200 EX scanning-transmission electron microscope (STEM). This is a high-resolution microscope with transmission, scanning, scanning transmission, and diffraction capabilities. Ultramicrotomes, carbon evaporators, darkroom facilities, and other equipment for specimen preparation are also available. The facility is available for use by graduate students and other University personnel, and for research projects and instruction. The facility is staffed by a director and a technical specialist who maintains the facility and assists and trains users. Advice in project design is also provided, and assistance with biological preparation is available by special arrangement. The facility welcomes projects of all sorts, in both biological and physical sciences.

The entomology program has a new biological quarantine laboratory, the only university-affiliated facility in the Northeast. Faculty and students search abroad for natural enemies of pest species and study them in the laboratory under secure conditions. The new facility is an important component of a long-standing program on insect ecology and the development of environmentally sensitive pest-control measures.

The Physical Therapy Program in the Independence Square II facility has established a clinical research unit that includes a computerized BIODEX muscle performance testing dynamometry system, a similar KIN COM unit, a METRECOM postural analysis system, and an ARIEL biomechanical analysis system for human motor performance assessment. Functional electrical stimulation for the spinal-cord injured and other neurologically impaired patients is made possible through a cooperative arrangement with the nonprofit organization Shake-A-Leg. Clinical evaluation, treatment, and collaborative studies are possible through the URI Physical Therapy Clinic.

The Speech and Hearing Clinic has one-way vision and listening facilities and diagnostic equipment for speech and language testing. Sound-treated testing rooms meeting ANSI standards and audiometric equipment provide for audiologic evaluation and research.

Writing Center. The Writing Center provides assistance to anyone in the University community who needs help with any phase of writing a paper or thesis. The Writing Center is staffed by Department of English College Writing Program faculty and Department of English graduate students. The Writing Center also serves as a practicum facility for WRT/EDC 435 students. Tutoring is provided by appointment on an individual basis, but walk-in appointments are sometimes available.

The center helps students become better writers and provides an environment in which writers can write with paper and pencil or on one of the center's Macintosh computers. Students can use an array of software, including word-processing software, to produce their work with support from center staff. The computers and software in the Writing Center are compatible with those in other laboratories campuswide.

The center is open approximately 40 hours per week, including daytime and evening hours. Appointments for tutoring can be made by calling 401-792-4690, or by visiting the center in Room 313, Independence Hall.

Research

Since 1907, the University has held the major responsibility within the state system for graduate education, which is closely associated with a strong program of research. Research leads to the discovery of knowledge and its dissemination through teaching. Responsibilities for graduate education, embodied in the Graduate School, and the overseeing of research funding in the Research Office are now assigned to the Office of Graduate Studies, Research, and Service. Research and public service projects are conducted in all departments and programs offering graduate degrees.

Research throughout the University is supported by an average of \$38 million per year. Support comes from foundations, commercial firms, federal and state agencies, and the University. The University ranks among the top five percent of the

country's colleges and universities in the amount of research funding received.

Applications for research grants are approved by the University's vice provost for research, who is also dean of the Graduate School. He or she serves as the liaison officer for the president, the provost, the academic deans, the Council for Research, and the faculty in matters pertaining to research and sponsored projects. The Research Office provides assistance to the University research community in all aspects of research and in the preparation of proposals.

In addition to the research conducted in the various departments, the University has established a number of research, extension, and technology transfer programs in the following specially defined areas:

- advanced sensor-based systems, including robotics
- agriculture experimentation and research
- anti-infective pharmacology
- aquaculture
- · atmospheric chemistry studies
- basic and applied research in filtration and separation processes
- biology, ecology, and control of vectorborne diseases
- biotechnology
- · business and economics
- cancer prevention through behavioral change
- child development
- consumer product safety
- drug delivery and development
- early design analysis for improving product designs for ease of manufacture
- evaluation services and assistance to exercise and athletic programs
- · family therapy
- · family violence
- food science and nutrition
- gerontology
- · historic costumes and textiles
- innovative programs in response to the needs of state government
- · international aspects of business
- labor and industrial relations

- management of coastal resources
- marine ecosystems
- marine geological sampling and testing
- marine pathology
- nuclear magnetic resonance spectroscopy
- Pacific-Basin capital markets information
- physical therapy
- policy evaluation and analysis for public officials
- pollution prevention and technical assistance for New England industry
- research and support activities for the public and human service areas
- satellite remote sensing for terrestrial, coastal, and nearshore applications
- scientific criminal investigation
- sea floor mapping
- Sea Grant research, education, and marine advisory services
- signal processing
- speech and hearing testing and diagnosis
- telecommunications and information marketing
- textile performance testing
- thin film
- urban field research and technical assistance
- use of geographic database (GIS) information to solve environmental problems
- · water resources research and training
- · writing skills and research

Additional information on the above areas of research and expertise can be obtained from the Research Office, 70 Lower College Road.

Accreditation

The University of Rhode Island is accredited by the New England Association of Schools and Colleges. In addition, certain courses and programs of study have been approved by national accrediting agencies.

The New England Association of Schools and Colleges is a nongovernmental, nationally recognized organization whose affiliated institutions include elementary schools through collegiate institutions offering postgraduate instruction.

Accreditation of an institution by the New England Association indicates that it meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer group review process. An accredited school or college is one that has available the necessary resources to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

Accreditation by the New England Association is not partial, but applies to the University as a whole. As such, it is not a guarantee of the quality of every course or program offered, or of the competence of individual graduates. Rather, it provides reasonable assurance about the quality of opportunities available to students who attend the University.

Inquiries regarding the status of an institution's accreditation by the New England Association should be directed to the administrative staff of the school or college. Individuals can also contact the association at 209 Burlington Road, Bedford, MA 01730. Phone: 617-271-0022.

The national accrediting agencies that have approved the quality of certain course offerings and programs of study include the American Assembly of Collegiate Schools of Business, the American Association of Marriage and Family Therapy, the American Chemical Society, the American Council on Pharmaceutical Education, the American Institute of Certified Planners and Association of Collegiate Schools of Planning, the American Dietetic Association, the American Library Association, the American Physical Therapy Association, the American Psychological Association, the American Society for Landscape Architects, the American Speech-Language-Hearing Association, the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, the National Association of Schools of Music, the National Association of State Directors of Teacher Education and Certification, the National Council for Accreditation for Teacher Education, and the National League for Nursing. In addition, the University has been authorized under federal law to enroll nonimmigrant alien students.

The University is also an approved member institution of the American Association of University Women, the American Council on Education, the Council of Graduate Schools, the North American Association of Summer Sessions, the National Association of State Universities and Land-Grant Colleges, the Northeastern Association of Graduate Schools, and the National University Extension Association.

The University Community

In addition to the student body, the University community is made up of faculty, administration, staff, and alumni. The Faculty Senate represents the faculty and was authorized in 1960 by the general faculty to conduct the business assigned to the faculty by law or by the Board of Governors for Higher Education. The Graduate Council is the representative body for the graduate faculty and determines the academic policies for graduate study. The office of University Ombud investigates complaints from students, faculty members, and administrative personnel that they have been unfairly dealt with in the normal channels of the administrative process. The ombud is a tenured or emeritus member of the faculty appointed by the Faculty Senate and is assisted by a student appointed by the President.

The Instructional Development Program (IDP) exists to help faculty members in their teaching responsibilities. Faculty members who want to increase their teaching effectiveness by improving their skills or developing new ones may work individually with IDP staff and participate in various workshops, colloquiums, and seminars on teaching.

The voice of the alumni is heard through the *Alumni Association*, which includes all those who have attended the University for two semesters or more and whose class has graduated. The organization, with about 70,000 members, promotes the interests of the University and helps keep alumni in touch with their alma mater. Through its office in Davis Hall and its network of chapters and affinity groups throughout the country, the Alumni Association maintains ties with its members through services, programs, special events, and the magazine *Quad Angles*. An annual fund drive provides scholarship and other University aid.

The University receives less than 30 percent of its support from the state. The balance comes from student fees and tuition, federal grants, and auxiliary enterprises and other miscellaneous sources. The *University of Rhode Island Foundation* encourages and administers gifts from private sources to build a substantial endowment for continuing support of the University. It is concerned with the support of University activities for which adequate provision is not ordinarily made by appropriations from public funds.

Academic and Social Codes. Each student is a member of the University community, with all the rights, privileges, and responsibilities that go with such membership. The rights and privileges include full use of the educational opportunities and facilities offered on campus. The responsibilities include those of making proper use of these facilities in order to progress educationally, respecting the rights of others, and knowing and obeying the rules and regulations developed by the University community for the good of the total membership.

The University expects that all course papers, theses, and dissertations will be prepared, and all examinations taken, in conformance with accepted standards of academic integrity. This includes the proper citation and attribution of all material that is not the original product of the writer. It is the student's responsibility to determine the appropriate style used in his or her discipline for presentation of material derived from other sources and to ad-

here to it scrupulously in all written presentations.

Affirmative Action and Nondiscrimination. The University of Rhode Island prohibits discrimination on the basis of race, sex, religion, age, color, creed, national origin, disability, or sexual orientation, and discrimination against disabled and Vietnam era veterans in the recruitment, admission, or treatment of students, the recruitment, hiring, or treatment of faculty and staff, and the operation of its activities and programs. This is in compliance with state and federal laws, including Titles VI and VII of the Civil Rights Act of 1964, as amended, Title IX of the 1972 Education Amendments to the Higher Education Act, Executive Order 11246, as amended, Sections 503/504 of the Rehabilitation Act of 1973, as amended, Section 402 of the Vietnam Era Readjustment Assistance Act of 1974, and the Americans with Disabilities Act of 1990.

The Dean of Admissions and Student Financial Aid, the Dean of the Graduate School, the director of Career Services, the director of the Counseling Center, and the director of the (undergraduate) Special Programs for Talent Development cooperate to provide information and guidance for economically and socially disadvantaged individuals seeking opportunities for study at the University. Inquiries may be directed to any of these offices.

With regard to scholarships and commissioning into the armed forces, the ROTC program, in accordance with Department of Defense policy, does not comply with the University's policy on nondiscrimination based on sexual orientation.

Most buildings on campus are architecturally available to the disabled, and provision is made to ensure that no student is prevented from pursuing a course of study because of restricted access to buildings.

AIDS is one of the most tragic, lifethreatening epidemics of modern times. Students, faculty, and staff at the University of Rhode Island must provide the compassion, understanding, and support necessary to help individuals with AIDS and HIV infection. As part of this responsibility, the University will vigorously enforce individual rights of confidentiality and freedom from discrimination. The rights of individuals with AIDS are covered under three University policies based on Section 504 of the Rehabilitation Act of 1973: "Reasonable Accommodation for Handicapped Employees," "Life-Threatening Illness," and "Handicapped Policy." Copies of these policies are available at the Office of Human Resource Administration, the front desk at Health Services, and the Disability Services office in the Memorial Union.

Inquiries concerning compliance with antidiscrimination laws should be addressed to the Affirmative Action Officer, Carlotti Administration Building; or to the Director, Office for Civil Rights, Department of Education, Region I. Questions regarding provisions for the disabled should be directed to the Coordinator for Disability Services in the Office of Student Life, 330 Memorial Union. Phone: 401-792-2098.

Notice of Change

Rules, regulations, dates, tuition, fees, the availability and titles of programs and areas of specialization, their administrative location, and courses set forth in this bulletin are subject to change without notice. Where a change in program requirements is made while a student is enrolled, the student may elect to complete the program under the requirements in effect at the time of matriculation or to shift entirely to the new requirements, but may not choose parts of each set. As a result of the ongoing reviews of all programs, certain offerings and specializations may be deleted or restructured between editions of the University Bulletin.

STUDENT LIFE AND SERVICES

An enriching college life includes a well-balanced mix of academic and extracurricular activities. The University offers a unique blend of student organizations and activities with an emphasis on student-run services and businesses.

Undergraduate Student Orientation

Orientation programs that facilitate the students' entry into the campus community are administered by University College. New students are charged a fee to cover expenses such as room, meals, and materials associated with their orientation program.

Summer Orientation Workshops. All undergraduate students who are beginning University careers are encouraged to attend a two-day workshop to plan their academic programs, to register for fall classes, to learn what to expect of the University, and to begin to acquire the skills essential for successful transition from high school and home to the University community. These programs are planned to personalize the student's first experience with the University as each one participates, with a group of approximately 15 classmates, in workshop projects. Admitted students begin receiving workshop registration materials in April.

Special programs are planned for families of new students to coincide with the workshop dates.

Transfer Orientation Programs. Transfer orientation is optional, but undergraduate students transferring to the University from another institution with 24 credits or less are encouraged to attend the full summer orientation program. Those with 24 credits or more who are admitted into University College, rather than any of the academic colleges, are invited to attend Transfer Day Orientation. This full-day program is presented during summer



orientation. The workshop is designed to acquaint transfer students with some of the unique features and procedures of the University.

Orientation for International Students. Programs held just prior to the formal beginning of the academic year assist the international student to function effectively, comfortably, and with reasonable initial success in the new environment. (International graduate students are also included in these programs.) Because successful transition to American culture, values, and institutions as well as to American academic life is crucial, new international students are required to attend the program. The Office of International Students and Scholars mails full information regarding arrival dates and costs of the orientation program to students in the spring.

Lifestyles

Undergraduate Housing. Residence halls and boarding facilities are available to students during the regular academic year and during summer sessions. Some students prefer the option of living at a fraternity or soronty.

Residence Halls and Dining Centers. There are 19 residence halls on campus offering a variety of living accommodations including coeducational housing, one all-female hall, a wellness hall (where students practice the five points of the Wellness Program developed in Stevens Point, Wisconsin), and a hall for first-year students. Priority consideration for residence hall assignments will be given to returning students who have submitted a housing application fee by the posted deadline. A notice will be forwarded to all residence hall students during the spring semester to inform them of the deadline and the housing application procedure. After returning students have been assigned, first-year students who have paid their housing application fee by May 1 will be given priority consideration for the remaining spaces. All other students will be assigned on a space-available basis. Assignments of incoming students are made in the order in which their housing application fees are received. Every effort is made to honor the roommate request. For rates and contracts, see pages 19-20.

Applications for residence hall living should be made to the Department of Housing and Residential Life, Roger Williams Building. Phone: 401-792-5374.

Three dining centers and two cash restaurants offer a wide variety of food items and are operated by the University for the convenience of the students. The centers were constructed with bond funds. In order to guarantee payment of these bonds, the University requires that all students living in residence halls purchase a meal plan.

Fraternities and Sororities. About 1,950 students participate in the fraternity-sorority system, which sponsors 23 houses designed for congenial small-group living. The staff of the Office of Campus Life advises these groups. The Greek houses promote scholarship, citizenship, and small-group living. Purchasing and business management for these houses is provided by a private corporation controlled by the fraternity and sorority members. The average room-and-board charge for fraternities and sororities is approximately \$200 less than for University residence halls and dining centers.

Graduate Housing. The Graduate Village, on Route 138, and the Graduate Terrace, a complex of buildings near the undergraduate residence halls, provide 140 units of unfurnished apartments for graduate students. There is a waiting list for these units; interested students should write to the Department of Housing and Residential Life for applications and for additional information.

Commuting from the Family Home. Many undergraduate and graduate students commute to the University from their family home. The advantages of home cooking, privacy, and lower costs are balanced against numerous challenges and opportunities: acquiring information about all aspects of the University; coping with transportation problems; balancing old and new relationships; budgeting one's time between academics, work, and home; and taking advantage of evening events on campus. Various services are coordinated by the Office of Student Life to meet commuter needs. Dining Services offers special meal plans for commuters; Health Services provides a satellite clinic of preventive services; and the Commuter Center provides information about University life. A car-pool matching service as well as maps, bus schedules, and student publications are available in the Memorial Union Commuter Lounge, Room 317. A brochure describing commuter services is available from the Commuter Center, 401792-2828, and Off-Campus Housing, 401-792-5393.

Commuting from "Down-the-Line." A number of students live in houses or apartments in the southern Rhode Island area known as "down-the-line." luniors and seniors as well as graduate students often choose to live off campus within a 10-mile radius of the University where summer homes are rented to students for the school year. Typically, a student will pay from \$300 to \$350 a month, plus utilities, for each bedroom in a furnished house. The majority of winter residents in these down-the-line summer communities are students who patronize nearby supermarkets, laundries, restaurants, shopping centers, and recreational facilities.

Since most of these rentals are five miles or more from campus, people without cars should investigate the availability of public transportation. A local bus service connects the shopping and service areas in Wakefield with the University. Some of the outlying resort areas, including Narragansett Pier, Galilee, and Scarborough, are also included in the bus routes. Bus service is also available to the Amtrak railroad station and Green Airport, and to Newport and Providence.

Off-Campus Housing, part of the Commuter Center, provides a computerized listing of rooms, apartments, and houses in the community available to students. They also offer a roommate matching service and assist students with information on landlord-tenant issues. Phone: 401-792-5393.

Students who plan to live off-campus during the 1996–97 academic year should note that the 1996 fall semester will begin the last week of August. Since rentals for most housing in the nearby resort areas start after Labor Day, students should plan on making special arrangements.

Older Students. Over 1,800 undergraduate students on the Kingston Campus are over 25 years old. There is an undergraduate student organization called Older Student Association (OSA) for these men and

women, who chose not to, or were unable to, attend college right after high school. Some are married, with family responsibilities. Some also have jobs and are part-time students. Some older students are attending school with G.I. Bill benefits. Some have retired from a first career and want to prepare for a second. The OSA plans a variety of social and educational programs and provides space in the Memorial Union for studying, taking breaks, or meeting with other students. Services coordinated by the Office of Student Life include an orientation designed to meet the needs of nontraditional students.

Women Students. Women students make up more than half of the student population (undergraduate and graduate). A Women's Center, administered by the Office of Student Life, provides specific resources to help women grow to their full potential. In addition, it coordinates lectures, programs, and activities of special interest to women. The Women's Center is located on campus at the corner of Alumni Avenue and Plains Road and has a lounge, a library, and meeting rooms. Phone: 401-792-2097.

Multicultural Students. Approximately 800 students use a variety of services for multicultural students. African-American, Native American, Asian, Latino, and Cape Verdean students have formed special-interest groups to further meet their needs. The Multicultural Student Center, located at 14 Upper College Road, serves as a gathering place for leisure, meetings, workshops, and various cocurricular activities. Counseling, programming, and other services are provided by the director and staff of Multicultural Student Services. Phone: 401-792-2851.

International Students. Approximately 1,000 international undergraduate students, graduate students, visiting scholars, faculty, and their dependents are advised and served by the Office of International Students and Scholars, located at 37 Lower College Road. Assistance is provided in the social, personal, financial, housing, and im-

migration areas. All communications from international faculty and scholars concerning nonimmigrant visas are also handled by this office. The International Student Association and a number of national student organizations provide students with the opportunity to participate in cultural activities, and the University's International Center serves as a meeting place for study, social events, and other cocurricular activities. Phone: 401-792-2395.

Students with Disabilities. Approximately 500 students have identified themselves as disabled. A full range of services is offered by the University through the Office of Student Life. Individuals who need disability assistance, sign language interpretation, or use of an FM personal sound system for University programs or activities should call 401-792-2285 (TDD/voice) 72 hours in advance. For more information about individualized services and accommodations, please contact the Coordinator for Disability Services. Phone: 401-792-2098.

Student Government

Student Senate. The Student Senate is a legislative body that represents the undergraduate students to the administration and the faculty and supervises extracurricular activities. It also distributes the Student Services fee among the various student organizations through its finance committee. Individual residence halls form their own governments. The Interfraternity Council supervises fraternity affairs and the Panhellenic Association governs sorority life.

Graduate Student Association (GSA). The GSA is a government body maintained by and for the graduate students of the University with the purpose of enhancing the academic, intellectual, and social opportunities of its members. Officers and members of the GSA Senate, which are elected annually from the entire graduate student body, distribute GSA funds and represent the graduate students to the University. The association has members

on the Graduate Council. The GSA offices are located in the Memorial Union. Phone: 401-792-2339.

University Student Discipline System

Administered by the Office of Student Life, the University Student Discipline System is designed to promote student growth and to preserve the atmosphere of learning necessary to the well-being of all students. Community standards of behavior and University policies for students are published in the Student Handbook. The Student Discipline System receives complaints or allegations from aggrieved parties, the available facts are gathered and evaluated, and the case may be referred for formal action to one of the University boards or for administrative action (if the student admits responsibility). Sanctions range from "no further action" to suspension or dismissal from the University and may include education, counseling, fines, or other conditions relating to the nature of the violation.

Student Activities

Approximately 85 student organizations exist in which students can become involved. The organizations may be political, academic, or media-related; many represent special-interest groups. Thousands of students participate in the activities sponsored by these organizations.

Lectures and Arts Programs. Lectures and arts programs are sponsored by several different offices and student organizations. The Student Activities Office presents a popular weekly film series and special events such as the A. Robert Rainville Leadership Awards Banquet. The Student Entertainment Committee sponsors an extensive entertainment series featuring concerts, local and regional musicians, and lecturers of national and international prominence. These events are funded by student fees, and opportunities abound for students to become involved in selecting, planning, and coordinating them.

The University Student Leadership Program for Undergraduates. This program, which is coordinated by the Student Activities Office, offers a credit course and noncredit cocurricular workshops and seminars. Students have the opportunity to become involved in the credited FLITE (First-year Leaders Inspired To Excellence) program during their first year. Workshops, seminars, and an upper-level course address leadership issues and help students develop leadership skills as they participate in student organizations and various experiences of campus life.

Student-Run Businesses. The Memorial Union offers students a number of opportunities to run businesses under full-time supervision but with a large amount of independence. Enterprises such as the food service units, the flower shop, the nut and candy shop, Memorial Union Technical Productions (sound and lighting), and the copy center allow for management training and for excellent work experience.

Athletics. The Department of Athletics is committed to providing recreational opportunities to students, faculty, staff, and alumni. The department seeks to complement the University's academic goals by enhancing physical, emotional, and social well-being through leisure activities and lifetime involvement in sports.

The Mackal-Keaney-Tootell Athletic Complex provides a wide range of facilities in the Mackal Field House, Keaney Gymnasium, and Tootell Physical Education Center. The Mackal Field House offers a six-lane, 200-meter indoor track; four multipurpose courts for basketball, tennis, and volleyball; motorized court-divider netting enabling simultaneous use of the track and courts; a gymnastics training center with two in-ground, foam-filled pits; and three fitness rooms containing a complete circuit of Cybex/Eagle variable resistance weight training machines, plateloading machines, Lifecycles, stair climbers, treadmills, and rowing machines. Keaney Gymnasium offers a 4,000-seat arena and men's and women's locker rooms. And the Tootell Physical Education

Center offers an aquatic center with competitive, instructional, and diving pools; East and West Gymnasium with basketball, volleyball, and badminton courts; a football team weight room; a women's athletic team weight room; and a dance studio.

Outdoor facilities include the Meade Football Stadium, 12 tennis courts, softball and baseball fields, an all-weather track, varsity field hockey and soccer fields, two beach volleyball courts, and numerous practice fields for recreation, intramural, club sport, and intercollegiate athletic activities.

Women's intercollegiate teams participate in Division I basketball, field hockey, gymnastics, soccer, softball, volleyball, cross country, indoor and outdoor track, swimming and diving, and tennis.

Men's intercollegiate teams participate in Division I-AA football, and in Division I baseball, basketball, golf, soccer, swimming, tennis, cross country, and indoor and outdoor track.

Competitive club sport teams participate in sailing, crew, ice hockey, men's volleyball, water polo, rugby, lacrosse, cycling, fencing, skiing, equestrian riding, and cricket. The Intramural Sports Program offers approximately 20 different sport activities and leagues throughout the year for all-male, all-female, and coeducational teams.

In addition to membership in the Atlantic Ten Conference, the University holds membership in the Yankee Conference (football), the National Collegiate Athletic Association, the Eastern College Athletic Conference, and the New England Intercollegiate Athletic Association.

Honor Societies. The University has chapters of a number of national honor societies, election to which is a recognition of accomplishment. The Society of the Sigma Xi is the scientific honor society, Phi Beta Kappa is a national liberal arts honor society, Phi Eta Sigma is a national honor society for freshmen, Phi Kappa Phi and the Golden Key are national honor societies for general scholarship, and Mortar Board recognizes scholarship and leadership. In

more specialized areas are the following: Alpha Delta Sigma (advertising), Alpha Sigma Lambda (continuing education), Alpha Kappa Delta (sociology), Alpha Zeta (agriculture), Beta Alpha Psi (accounting), Beta Gamma Sigma (business), Kappa Delta Pi (education), Delta Pi Epsilon (business education), Dobro Slovo (Slavic), Eta Kappa Nu (electrical engineering), Lambda Kappa Sigma (women's pharmacy), Lambda Tau (medical technology), Omicron Delta Epsilon (economics), Omicron Nu (home economics), Phi Alpha Theta (history), Phi Sigma (biological science), Phi Sigma lota (foreign languages, literature, and linguistics), Pi Delta Phi (French), Pi Mu Epsilon (mathematics), Pi Sigma Alpha (political science), Pi Tau Sigma (mechanical engineering), Psi Chi (psychology), Rho Chi (pharmacy), Sigma Delta Pi (Spanish), Sigma Iota Epsilon (Management), Sigma Phi Alpha (dental hygiene), Sigma Pi Sigma (physics), Sigma Theta Tau (nursing), and Tau Beta Pi (engineering).

Other Organizations. In addition to intercollegiate athletic teams, a number of organizations represent the University in competition, exhibitions, and public performances. The University Band, Chorus, and Orchestra are under music department direction, and students may receive credit for participation in any one of these. The University Theatre, under the direction of the Theatre Department, presents several plays each year. The URI Debate Council is directed by members of the Department of Communication Studies and participates in intercollegiate debates. The Cheerleaders are active at varsity football and basketball games and rallies.

There are about 30 professional organizations on campus related to academic areas, and there are a number of groups serving social, recreational, cultural, religious, and political interests.

Students publish a newspaper four times a week, a monthly literary magazine, a monthly publication of political and social commentary, and a yearbook. Radio station WRIU, with local AM and FM reception that reaches all of Rhode Island and

parts of Connecticut and Massachusetts, is student-run and operates 365 days a year. Also, there is a 24-hour student-run ambulance service.

Student Services

Career Services, Career Services, located in Room 228 in Roosevelt Hall, helps students assess goals, develop skills, and implement career objectives. All students, including freshmen and graduate students, may seek information and assistance at this office. It is staffed by professional career advisors and planning specialists who provide individual advising, noncredit workshops, and on-campus interviews with a broad range of potential employers. The Career Services staff helps students with job and career inquiries, resumé and cover letter writing, job search methods, and research concerning potential employers. Phone: 401-792-2311.

The Career Library at Career Services houses written materials, videotapes, self-assessment tools, computer programs, brochures, and company literature. A variety of materials provides information concerning specific careers, job openings, graduate programs, internships, and training programs. Individual publications are available upon request. Through Career Services, students may also attend special programs on careers and informational briefing sessions offered by employers. Each year, 200 to 250 companies and organizations conduct on-campus interviews for full-time jobs after graduation.

Counseling Services. The Counseling Center, located in Room 217, Roosevelt Hall, is staffed by professional counselors, psychologists, and social workers. It offers short-term individual counseling and a variety of skill-building and support groups to help undergraduate and graduate students cope successfully with demands. The Counseling Center provides assistance to students in areas such as adjusting to university life, coping with stress, building satisfying relationships, and developing more self-esteem.

The Counseling Center also administers professional examinations such as the Miller Analogies Test, the Graduate Record Examinations, the Law School Admissions Test, the Medical College Admission Test, the National Teacher Examinations, and the Graduate Management Admission Test. Phone: 401-792-2288.

University Chaplains. The University chaplains are active in providing religious services and in counseling, advising campus groups, teaching, and programming. The chaplains are available to all students, staff, and faculty on a 24-hour basis. The six chaplains represent the Roman Catholic, Jewish, Episcopal, and Protestant communities; referrals are available to representatives of other faiths.

Memorial Union. The center for campus activities, the Memorial Union houses a wide variety of educational, social, cultural, and recreational services and facilities for both undergraduate and graduate students. These include meeting and conference rooms, lounges, a browsing room, study rooms, a darkroom, a radio station, campus newspaper offices, a games room, offices for student organizations, a scheduling and information office, a ballroom, a party room, an optical shop, a flower shop, a convenience store, a cafeteria, a restaurant, a pizza shop, a nut and candy shop, an ice cream and pastry shop.

Among the services provided are a travel agency, a unisex hair salon, a credit union, a copy center, a bookstore, and the Memorial Union Technical Productions (which offers technical services in sound and lighting).

An undergraduate student board of directors working with the director and staff of the Memorial Union and Student Activities Office determines policy for the Union and plans a full program of social, cultural, intellectual, and recreational activities.

Health Services. Located in the Potter Building, University Health Services offers special clinics¹ in gynecology, family planning, internal medicine, surgery, orthopedics, nutrition, psychiatry, and dermatology, as well as general medical and nursing care, laboratory, X-ray, and pharmacy. Allergy injections are given, provided the vaccines are supplied.

Outpatient services during the academic year are available seven days a week, 24 hours a day, except for certain holidays or periods when the University is closed. Physicians are available either for direct services or on call. Nurses are on duty at all times during the academic year. Specialists are available by appointment only at specific times. Services provided, except for laboratory, X-ray, and prescription co-pay, are covered by the mandatory health fee.

Hospital care is available in the local community. All medical expenses incurred outside the University's Health Services are the responsibility of the student. Therefore, students are required to have adequate health insurance coverage (see the Health Services brochure "To Your Health"). Students who choose a private physician must assume responsibility for expenses incurred.

The Health Education Department is located in the rear of the Potter Building. Health Education is designed to provide a variety of services to promote and enhance personal health and well-being. Information on how to achieve a healthy lifestyle is provided. The department sponsors wellness clinics, outreach activities, and awareness days, and dynamic peer educators offer various dormitory and Greek workshops. A registered dietitian is available at the department, by private appointment, for nutrition counseling and education.

Learning Assistance Center. The Learning Assistance Center, located in the basement of Roosevelt Hall, helps students improve their study techniques. Services are offered to students on an individual basis, in group workshops, and through peer tutoring. Individual sessions and workshops cover a range of topics including time management, strategies for improving reading and memory, test anxiety, and systems for taking notes. Peer tutoring in high-risk courses is offered at regularly scheduled times throughout the semester. The ser-

vices of the center are offered primarily to undergraduates, but graduate students often rely on the center to renew former skills and for other forms of assistance. Phone: 401-792-2367.

Confidentiality of Student Records

Procedures for the release and disclosure of student records maintained by the University are in large measure governed by state and federal laws. Where the law is silent, the University is guided by the principle that the privacy of an individual is of great importance and that as much information in a student's file as possible should be disclosed to the student on request. A current or former student has the right to inspect and review official records, files, and data directly related to that student. This right does not extend to applicants, those denied admission to the University, or those who were admitted but did not enroll. Some records are not available to students.

Third parties do not have access to personally identifiable records or information pertaining to a student without the written consent of the student who specifies that the records be released. Parents and spouses are considered third parties.

Detailed guidelines for the release and disclosure of information from the student records are available from the Office of Student Life. These guidelines comply with the legal requirements of the Family Educational Rights and Privacy Act of 1974, as amended.

¹ Specialties are subject to availability of physicians and to financial resources.

FEES, EXPENSES, AND FINANCIAL AID



Fees and Expenses

Tuition, fees, and policies set forth in this bulletin are subject to change without notice.

In addition to the University fees outlined below, both undergraduate and graduate students should expect to spend about \$600 per academic year for books and supplies and should allow for additional expenditures for travel and personal needs. The amount of tuition varies depending on whether the student is a legal resident of the state of Rhode Island and whether the student is enrolled in full- or part-time study.

A resident student is one eligible to pay a reduced tuition rate offered to Rhode Island residents. Residency is determined on the basis of all relevant information available, in compliance with the stated policy of the Board of Governors for Higher Education; for undergraduate students that determination is made by the Dean of Admissions and for graduate students by the Dean of the Graduate School (see "Resident Student Status, next page).

Regional status is granted to students enrolled in the New England Regional Student Program, whereby students from other New England states may enroll in designated programs at URI that are not offered in their own states (see page 27).

All charges are billed by the semester and are due and payable upon receipt of the bill or by the due date indicated on the bill.

Schedule of Fees for Undergraduate Students. The following fees are effective for the 1995–96 academic year.

Full-Time Students Pay per Year

	,
Tuition	
Rhode Island residents	\$3,154
Out-of-state residents	10,846
Regional students	4,732
Standard Fees	
Registration fee	40
Memorial Union fee	206
Student Services fee	494
Student Health Services fee	410
Student Health Insurance plan	512
Library/Computing fee	100

Credit overload fee: Credits in excess of 19 will be billed at the per-credit rate given for part-time undergraduate students (see below). Enrollment at the Kingston and Providence campuses is combined when determining this fee.

Students Living in Residence Halls Add

_	
Room rent	\$3,276-3,584
Meal plans ¹ :	
Board plans	
Any 20 meals (MonSun.)	\$2,474
Any 15 meals (MonSun.)	2,288
Any 10 meals (Mon.–Fri.)	2,078
Points plans	
Level A (45,500 points)	\$2,138
Level B (58,500 points)	2,270
Level C (75,500 points)	2,414
Level D (86,700 points)	2,556

Students Living in a Fraternity or Sorority Add Average room rent \$2,330

2,200

Part-Time Students

Average board

Students registered for less than 12 credit hours per semester are charged the following fees:

Tuition, per credit hour	
Rhode Island residents	\$13
Out-of-state residents	452
Regional students	197
Registration fee per semester	20
Activity fee per semester	20
Memorial Union fee per credit hour	9
Student Services fee per credit hour	17
Library/Computing fee per credit hour	

Undergraduate students taking courses at another institution for credit at URI pay \$151 per semester. (See "Off-Campus Study," page 28.)

Schedule of Fees for Graduate Students. The following fees are effective for the 1995–96 academic year.

Full-Time, One Academic Year

Students registered for 9–15 credits per semester as well as graduate research and teaching assistants are considered full-time and are charged the following fees:

Tuition

Taltion	
Rhode Island residents	\$3,312
Out-of-state residents	8,136
Regional students	4,968
Standard Fees	
Registration fee	40
Memorial Union fee	154
Student Services fee	378
Student Health Services fee	410
Student Health Insurance plan	512
Library/Computing fee	100

Credit overload fee: Credits in excess of 15 will be billed at the per-credit rate given for part-time graduate students (see below). Enrollment at the Kingston and Providence campuses is combined when determining this fee.

Part-Time, One Semester

Students registered for less than nine credits per semester are charged the following fees:

	Tuition, per credit hour	
	Rhode Island residents	\$184
	Out-of-state residents	452
	Regional students	276
	Registration fee	20
,	Graduate tax per semester	1
	Memorial Union fee per credit hour	9
	Student Services fee per credit hour	17
	Library/Computing fee	
	per credit hour	4

Graduate students maintaining continuous enrollment and registered for no credit (CRG 999) are required to pay a fee of \$205 per semester.

Resident Student Status. A student who is a resident of the state of Rhode Island pays the in-state fee, but a student from another state or a foreign country who is in Rhode Island primarily for educational purposes, even though he or she remains in the state during vacation periods, is considered a nonresident and pays the out-of-state fee.

The parents or legal guardians of a minor student must have been residents of the state for one year immediately preceding the first class day of the first term of a student's registration for that student to claim resident student status. A nonresident student who reaches 18 years of age while a student does not by virtue of that fact alone become a resident student.

An "emancipated student" must establish the same bona fide residency for instate tuition exemption. An emancipated student is one who has attained the age of 18, and whose parents have entirely surrendered the right to the care, custody, and earnings of the student and have not claimed the student as a dependent for tax purposes for two years. If any of these conditions is not met, he or she is presumed to be an unemancipated student.

Dependents of members of the armed forces, as well as members of the armed forces stationed in the state on military orders, are entitled to classification as resident students.

Undergraduate students are classified as resident or nonresident by the the Dean of Admissions, graduate students by the Dean of the Graduate School. A student may appeal the decision to the Board of Residency Review. The preceding information is a summary of the regulations governing student classifications for tuition purposes. The complete text of the regulations adopted by the Board of Governors for Higher Education can be obtained from the Office of Admissions and from the Graduate School Office.

A Certificate of Residence is included in the graduate self-managed application package.

Student Services Fee. As part of the Student Services fee of \$494, each undergraduate student is assessed \$80 per year, which is distributed to the Student Senate to support a wide variety of student programs and activities. The balance of the fee supports athletics, recreation, and arts and cultural programming, and the total budgets for Career Services, Multicultural Student Services, and the offices of the

Vice President for Student Affairs, the Assistant Vice President for Campus Life, and the Director of Student Life. The \$378 Student Services fee paid by graduates is used to support all of the above as well as the Graduate Student Association. A Memorial Union fee of \$206 is also assessed per year for undergraduates, \$154 for graduates.

Student Health Services Fee. The Student Health Services fee is mandatory for all fulltime undergraduates and all international students and their spouses; graduate students are not required to pay the fee if they have comparable coverage as determined by Health Services. Part-time students at the Kingston Campus may elect to pay the fee. It covers outpatient care provided on campus and health services provided on campus with the exception of laboratory, X-ray services, special OB/GYN procedures, orthopedic appliances, and certain pharmacy services. Outpatient care consists of all nursing, physician, and health education services, plus certain pharmacy services.

Student Health Insurance Plan. It is the policy of the University of Rhode Island that all full-time students have current health insurance in order to provide coverage for unexpected, extended, and expensive care resulting from accidents and illnesses that are not included in the Student Health Services fee. All international students, their spouses, and their dependents must enroll in the Student Health Insurance plan. All other full-time students are required to enroll in this plan unless evidence of comparable coverage in another plan is provided and the student completes, signs, and returns a waiver card to Health Services prior to the end of the add period (the first two weeks of classes).

Students can obtain a Ram Card Account, which is an optional debit card account accessed through the student ID card. Students who participate in this program may spend their money at the URI Bookstore, the Ram's Den, the America's Cup Room, as well as other locations. A minimum deposit of \$50 is required. Unused dollars are transferable from semester to semester until graduation.

Unless the insurance is waived, the student will be billed. Waiver forms are normally mailed to the student by Health Services. The forms are also available at Health Services in the Potter Building. Please refer to the Student Health Insurance brochure for an explanation of benefits.

The Student Health Insurance fee is optional for noninternational part-time students.

Additional Fees. An enrollment deposit is required from every undergraduate student accepted and is applied to the first-term bill. In-state students pay a \$150 deposit; out-of-state and regional students pay a \$300 deposit. The enrollment deposit is 50 percent refundable until June 1, or 25 percent refundable until August 1, provided that the Admissions Office is notified in writing of the student's intention not to enroll.

Undergraduate students returning after an absence of one or more semesters are required to remit a nonrefundable returning student deposit of \$50.

A transcript service fee of \$25 is assessed to all students in their first semester of enrollment at the University.

Students may be asked to make key deposits and to cover incidental expenses for specific courses. A laboratory/clinical fee of \$25 will be charged for each undergraduate and graduate laboratory or clinical course. Undergraduate engineering and pharmacy students will pay a program fee commencing in their third year: \$100 per semester for full-time students, \$9 per credit for part-time students.

Expenses connected with class trips and practice teaching are charged to the students concerned.

Students taking applied music courses, except for composition, are charged an additional fee of \$95 for one credit (half hour of a private lesson per week) and \$190 for two, three, or four credits (one hour of a private lesson per week). Applied music courses for which students are charged an additional fee are MUS 110, 210, 310, 410, and 510.

Beginning in the sophomore year, student nurses must purchase authorized uniforms and nursing equipment. The approximate cost is \$250.

When near completion of studies, but prior to submitting a petition to graduate, each undergraduate student must pay a \$30 graduation fee. Graduate students must pay a \$30 graduation fee during their second semester of study. Master's degree candidates must pay a thesis-binding fee of \$18, and doctoral candidates must pay dissertation-binding and microfilming fees of \$78. These fees are due before candidates submit\their theses or dissertations for approval by the Graduate School.

Late Fees and Special Fees

Late Registration Fee. A late registration fee is charged to matriculated students whose registration is not completed before the first day of classes. The fee is \$20 during the week classes begin and \$55 thereafter. Nonmatriculated students are charged a late registration fee of \$55 after the end of the add period (the first two weeks of classes).

Late Payment Fee. Unpaid balances following the term bill due date are subject to late payment/billing penalties which are based upon the outstanding amount due. The penalty is also applied to students who register late effective as of the end of the add period (first two weeks of school) until date of registration and payment. The late payment fee is not cancelled nor reduced without presentation of written evidence of University error signed by an official of the University. Late payment fees are: \$10 per month if the balance is over \$50 and under \$400; \$15 per month if the balance is between \$399.99 and \$1,000; \$25 per month if the balance is \$1,000 or more.

Returned Check Fee. A \$20 returned check fee is assessed with each check not accepted for deposit and returned by the bank.

University Monthly Payment Plan. The University offers a monthly payment plan to assist students and parents in meeting term bill obligations. A nonrefundable ap-

plication fee is required prior to acceptance in the plan. The application fee is \$30 per semester, or \$50 per academic year, and is contingent upon acceptance by the bursar.

Reassessment of Fees. Students may drop and add credits during the first two weeks of each semester (add period) without affecting their initial fee assessment. Fees are reassessed and adjusted at the end of the add period to reflect any drop/add transactions processed by the Office of the Registrar. Any reassessment of fees after the close of the add period occurs only for part-time students who add credits and for full-time students who add credits beyond the credit overload limit. Note: Dropping credits after the end of the add period does not reduce term bills.

Kingston and CCE Enrollment. All students who are full-time because of combined enrollment at both the College of Continuing Education and the Kingston Campus (12 credits and over for undergraduates, 9 credits and over for graduates including all teaching and research assistants) are assessed the standard Kingston fees at the full-time rate when enrolled in at least seven credits for undergraduate students, and at least five credits for graduate students, on the Kingston Campus. Undergraduate students enrolled at the Kingston Campus for less than seven credits, and graduate students for less than five, are charged the Kingston fees at the part-time rate. Note: Dropping credits after the end of the add period does not reduce term bills.

Tuition Waiver for Senior Citizens. Any Rhode Island resident senior citizen who submits evidence of being 60 years of age or over, and of having a household income of less than three times the federal poverty level, will be allowed to take courses at any public institution of higher education in the state with the tuition waived. However, students who qualify for waivers must apply for financial aid. Any aid received must be applied toward the amount waived. Admission into particular courses will be granted on a space-available basis and at

the discretion of the receiving institution. All other costs of attendance are paid by the student.

Tuition Waiver for Unemployed. Any individual who submits evidence of currently receiving unemployment benefits from the State of Rhode Island, of having a household income of less than three times the federal poverty level, and of not being claimed as a dependent by a parent (or someone else) will be allowed to pursue course work at any public institution of higher education in Rhode Island with tuition and the registration fee waived. To be eligible for the waiver, the student must have been collecting benefits within 60 days before the first day of classes. Students collecting benefits as of the first day of classes and beyond are not eligible for tuition assistance. However, students who qualify for waivers must apply for financial aid. Any aid received must be applied toward the amount waived. Individual students will be responsible for all other costs of attendance. Admission into particular courses will be granted on a space-available basis and at the discretion of the particular institution. This waiver also applies to any Rhode Island resident who submits evidence of residency and of currently receiving unemployment benefits in another state.

University Refund Policies. Refunds of payments to the University will be made according to the following two policies.

Withdrawal of Continuing Students. Refunds of payments are made to continuing students who officially withdraw from the University or take a leave of absence according to the following scale:

Attendance Period	% Charged	% Refunded
Week 1	10	90
Week 2-4	50	50
Week 5-8	75	25
Week 9 to		
End of Term	100	0

Under this policy, registration, insurance, auxiliary, and similar fees are not refundable as of the first day of classes.

Amounts owed by the student and not paid by the withdrawal date are deducted from the refund amount due the student. This scale also applies to first-time students who do not receive Title IV Federal Financial Aid.

Withdrawal of First-Time Students Receiving Title IV Federal Financial Aid. First-time students (those who have never attended the University) receiving Title IV federal aid (Pell, SEOG, etc.) who withdraw from the University are subject to a federally regulated withdrawal refund policy. This policy may change as statutory and regulatory changes covering student financial assistance take effect. Under this policy, the amount of tuition, fees, and room-and-board charges to be refunded is calculated according to the following scale:

Attendance Period	% Charged	% Refunded
Week 1	10	- 90
Week 2-3	20	80
Week 4	30	70
Week 5-6	40	60
Week 7–8	50	50
Week 9	60	40
Week 10 to End of Term	100	. 0
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The refund is based upon a student's attendance period rounded down to the nearest 10 percent but never less than 10 percent. Amounts owed by the student and not paid by the withdrawal date are deducted from the residual bill amount when calculating the refund. A reasonable administrative fee not to exceed the lesser of five percent of charges assessed or \$100 is charged.

Examples of refund calculations are available at the Bursar's Office.

For refund purposes under both policies, the attendance period begins on the first day of classes and ends on the official date of withdrawal or leave of absence. If an official date is not known, the last known date of attendance is used. The number of weeks in attendance is calculated using the round-up method; i.e., the first day of the second week of attendance constitutes an entire week.

Students who withdraw or take a leave of absence during the add period (the first two weeks of school) are assessed tuition and fees based upon the highest number of credits for which they are registered during this period. Refunded amounts are calculated according to the scales at left.

The Student Health Insurance fee is not refundable unless the fee is waived, regardless of the date of withdrawal, since the student is covered for the entire academic year. The fee is cancelled, however, if the student withdraws prior to the first day of classes.

Indebtedness to the University. Failure to make full payment of all required fees or to resolve other debts to the University (for example, unreturned athletic equipment, overdue short-term or emergency loans, lost library books, debts to the Department of Housing and Residential Life for damages, and obligations required by the University Student Discipline System) may result in denial of registration for the following semester and/or disenrollment. Appropriate departments will provide the student with notice of the debt, reason for it, and a review, if requested. A student must fulfill all financial obligations to the University before receiving transcripts or a diploma.

Housing

Rates for Graduate Apartments. Rents for apartments at the Graduate Village and the Graduate Terrace range from \$437 to \$515, with an additional charge for utilities at the Graduate Village.

Rates for Rooms in Fraternities and Sororities. The average projected room rate for fraternities and sororities for 1995–96 is \$2,330.

Rates for Residence Halls. Following are the rates for University housing for undergraduates for the year 1995–96. For complete information, write to the Director of Housing and Residential Life, Roger Williams Building. All rates are for double rooms. For single rooms, where and when available, \$172 per year is added to the

double-room rate. Board is mandatory for students living in residence halls.

\$3,276 Adams, Aldrich, Barlow, Bressler, Browning, Burnside, Butterfield, Coddington, Dorr, Ellery, Hopkins, Hutchinson, Merrow, Peck, Tucker, Weldin

\$3,584 Fayerweather, Gorham, Heathman

Residence Hall and Dining Contract. University housing is contracted for the *entire* academic year. A nonrefundable fee of \$100 is required at the time of application for a room. This application fee will be applied to the first-semester housing bill.

All residence hall rates are quoted for the period specified in the contract. Payments are due in full by the published term bill due date each semester or upon receipt of the bill from Housing and Residential Life. Checks are payable to the University of Rhode Island and should be remitted to the Office of the Bursar.

A student vacating his or her assigned quarters before the end of the period under contract will be held responsible for the total charges for the entire period unless the move results from a withdrawal or leave of absence from the University. No refund will be given when a student moves from University quarters to a private home or decides to commute. Students who withdraw or take a leave of absence from the University mid-year may obtain Housing and Residential Life refunds based on the University refund policy.

The University is a nonsectarian institution, and resources are not available to construct special diet kitchens for religious, health, or personal reasons. Extreme medical problems are reviewed by a nutritionist. Some medical problems may be accommodated. Students requesting a medical variance from the meal plan must submit for approval a medical variance report from a physician to Dining Services prior to the first day of classes. Application forms may be obtained by contacting the Dining Services central office in the Memorial Union at 401-792-2055.

The University dining system operates on a computerized entry system using the student ID card. This card must be brought to all meals.

Students who withdraw from the residence halls may obtain Dining Services refunds based on the University refund policy.

Financial Aid

Financial aid is money made available from federal, state, local, or private sources which helps students attend the post-secondary institutions of their choice. At the University of Rhode Island, these varied sources are administered by the Student Financial Aid Office in Roosevelt Hall. The financial aid programs are designed to serve students from the widest possible range of society, and all students are encouraged to apply.

In most cases, financial aid will be awarded in a "package" of grants (which do not have to be repaid), loans (which have to be repaid), and student employment opportunities (part-time jobs while attending school). The purpose is to assist the students in meeting the costs of attending the University. To continue receiving financial aid, it is necessary to reapply and demonstrate sufficient financial need each year as well as to maintain satisfactory academic progress.

Financial aid to students is awarded without regard to race, sex, religion, age, color, creed, national origin, disability, or sexual orientation, and without discrimination against disabled and Vietnam era veterans.

Financial Need. A student does not have to be from a low-income family to qualify for financial aid, but does have to have "financial need." "Need" is the difference between what it costs to attend the University and what the student and family can contribute from financial resources. Parents, insofar as they are able, are expected to bear primary responsibility for financing a son's or daughter's college education, and the student is also expected to earn a

portion of the resources for college expenses, usually through summer employment.

Eligibility. Only citizens, nationals, or permanent residents of the United States are eligible to apply for financial aid. Foreign students desiring information about financial assistance should contact the Office of International Students and Scholars at the University.

To be considered for financial aid, a person must have been accepted and enrolled at least half time (six credits for undergraduates, five for graduate students) as a matriculated student at the University. Enrolled students must be making satisfactory progress toward their degree according to the University's policy on satisfactory progress (see page 22).

Application Procedure. All students are to complete a Free Application for Federal Student Aid (FAFSA). This form is also used to apply for most state scholarships, including those for Rhode Island and Massachusetts. Residents of other states should check with their state scholarship or grant authority to inquire if another form is needed to apply for state scholarship funds.

The awarding of financial aid for the current academic year may require validation and documentation of all information submitted to the Student Financial Aid Office. Therefore, students must provide signed copies of their own and their parents' last U.S. Income Tax Returns 1040/1040A/1040EZ. When and if requested by the Student Financial Aid Office, all tax schedules must also be included.

Application Priority Dates. The FAFSA should be mailed to Federal Student Aid Programs after January 1, and no later than March 2. Applications completed on or before the above priority dates will receive first consideration for financial aid awards; however, applications will be processed as long as funds remain available.

Federal Aid Available

Federal Pell Grants. The Pell Grant, available to undergraduates, is designed to form the foundation of all financial aid received. Each applicant is mailed a set of Student Aid Reports, which should be forwarded to the Student Financial Aid Office. The amount of the Pell Grant is calculated according to the cost of attendance, the number of credits for which the student enrolls, and the Pell Grant Index printed on the Student Aid Report.

Federal Supplemental Educational Opportunity Grant. This program is intended to assist undergraduate students with financial need. First priority is given to students receiving Pell Grants. These awards are available in amounts ranging from \$100 to \$4,000 per year.

Federal Perkins Loan. Eligibility is based on exceptional financial need. Undergraduates may be eligible to borrow up to \$3,000 for each year of undergraduate study, with a maximum of \$15,000. Graduate students may be eligible to borrow up to \$5,000 for each year of graduate and professional study. All undergraduate and graduate loans are limited to a total of \$30,000. These loans have a simple interest rate of five percent annually. Interest does not accrue until nine months after graduation, termination of studies, or enrollment for less than half time. Minimum payments of \$90 per quarter are required, and the repayment period may extend up to 10 years. Deferments and cancellations of principal are allowed in certain circumstances.

Nursing Student Loan Program. This program is available to undergraduate students enrolled in the College of Nursing. The long-term, low-interest loans become due and payable nine months after graduation or termination of nursing studies. The loans are designed to assist financially needy students attain careers in nursing.

Health Professions Student Loan Program. This loan program is restricted to undergraduate students with financial need majoring in pharmacy. Federal Work-Study Program. This federally supported program provides undergraduates with part-time employment during the school term and full-time employment during vacation periods. The jobs may be either with University departments, or with off-campus, nonprofit, nonsectarian, and nonpolitical agencies. Other institutionally funded employment is also available. A listing of these jobs is maintained by the Student Financial Aid Office.

Federal William D. Ford Direct Loan, All students who complete the Free Application for Federal Student Aid can participate in the William D. Ford Direct Loan. Those students who meet the financial need criteria may receive in whole or in part a subsidized loan where the federal government pays all interest until six months after graduation, withdrawal, or a drop in enrollment status to less than half time. Unsubsidized loans are available for those students who do not qualify for the needbased subsidized William D. Ford loan. Those eligible to borrow under the unsubsidized William D. Ford Direct Loan program include independent undergraduate students, graduate and professional students, and certain dependent undergraduate students. The same terms and conditions as for subsidized William D. Ford loans apply, except that the borrower is responsible for the interest that accrues while the student is still in school. The annual loan limits are \$4,000 for first- and second-year undergraduates, and \$5,000 for undergraduates in their third year or higher. Graduate and professional students may borrow up to \$18,500. The aggregate loan limits (for full-time students) are: \$23,000 for undergraduates and \$73,000 for graduate and professional students.

Federal William D. Ford Direct Loan for Parents. Parents who have good credit may borrow up to the cost of education minus estimated and actual financial aid by submitting an application to the Student Financial Aid Office. If the loan is approved, it will be disbursed in multiple installments, usually at the beginning of each semester. The interest rate is variable; the current

rate is 7.43 percent and can go no higher than 9 percent. A four percent origination fee is deducted from loan proceeds at the time of disbursement.

Family Education Loan (FEL). Credit-worthy parents, an estimate based on debt-to-income ratio, may borrow up to \$15,000 for undergraduate students through this program. A fixed interest rate of 7.5 percent is charged, and parents can take up to 10 years to repay. A one-time \$25 processing fee is charged for each application. Eligible parents may also take advantage of the home equity options when applying for this loan.

University Aid Available

University Grant. The University provides grants to over 1,000 undergraduate students. To be awarded a University Grant, the student must demonstrate financial need and a satisfactory academic record.

Arthur L. Hardge Memorial Grant. This grant is awarded to economically and socially disadvantaged undergraduate residents of Rhode Island who participate in the Special Programs for Talent Development.

T.A. Suddard International Grant. A limited number of partial tuition awards are made to undergraduate international students, based on financial need. Recipients are chosen by the International Scholarship Committee.

University Scholarships. Scholarship awards require not only financial need but evidence of high academic potential. Some scholarships have specific restrictions, such as place of residence, major, and class year. A list of available scholarships can be found in the Appendix, pages 320–330.

Athletic Grants. These grants are made on the recommendation of the Department of Athletics to athletes who meet the established qualifications. These awards are based on athletic ability rather than on need. Students interested in such assistance should contact the Department of Athletics.

Regular Student Employment. Positions funded by the University are available to more than 1,500 undergraduate and graduate students. Job postings are available in the Student Financial Aid Office.

University Loans. Emergency loans ranging from \$10 to \$200 are available to full-time undergraduate and graduate students. These loans are short-term in nature (14–90 days), and can be made only when there is a means of repayment. Application forms are available in the Student Financial Aid Office.

Other Sources of Aid

Rhode Island State Scholarships and Grants. Undergraduate residents of Rhode Island are encouraged to apply for Rhode Island State Scholarships or Grants. While both are based on need, the scholarships also require a strong academic record in high school. The Rhode Island State Scholarship and Grant Program is administered by the Rhode Island Higher Education Assistance Authority, 560 Jefferson Boulevard, Warwick, RI 02886. Other states offer similar programs; for more information, contact your state's scholarship agency.

There are many additional sources of financial aid available to students who qualify: scholarships from private organizations, clubs, labor unions, fraternities, sororities, and businesses. Students should apply directly to the source if they believe they qualify. See Appendix, pages 320–330, for a list of loans, scholarships, and special awards available to undergraduate and graduate students.

Policy on Satisfactory Academic Progress. The Education Amendments of 1980, P.L. 96-374, October 3, 1980, state that "a student is eligible to receive funds from federal student financial aid programs at an institution of higher education if the student is maintaining satisfactory progress in the course of study he or she is pursuing according to the standards and practices of that institution."

For Undergraduate Students. To maintain satisfactory progress as an undergraduate student at the University of Rhode Island for federal financial aid purposes, the student must be enrolled in a degree-granting program on at least a half-time basis (six credits) for each semester during which aid is received. Students enrolled full-time may receive aid for 10 semesters in completing what is normally a four-year program. Students completing what is normally a five-year program are permitted to receive aid for the equivalent of 12 full-time semesters. Part-time students may receive equivalent aid, with an accumulation of 12 credits corresponding to a full-time semester. Two full-time (six credits) summer sessions are considered the equivalent of one semester. The determination of a transfer. student's eligibility includes the semesters of federal financial aid received prior to attendance at the University of Rhode Island.

Satisfactory progress standards will conform to the University's academic standards, as delineated in the University Manual. Students who are placed on academic probation will be notified of the possibility of their loss of federal financial aid eligibility. Students on academic probation for two consecutive semesters and students who are academically dismissed will be ineligible to receive federal financial aid. Criteria for probation and dismissal appear in the University Manual. A student who is declared ineligible to receive aid for not maintaining satisfactory academic progress may appeal the decision to the Satisfactory Progress Appeals Committee. Readmission to a program or removal from probation does not automatically constitute eligibility for federal financial aid.

Failure to maintain satisfactory progress for two consecutive semesters will result in the loss of eligibility for federal financial aid until the student is determined by the Student Financial Aid Office to be once again making satisfactory academic progress.

If there are unusual circumstances that result in the student's inability to make satisfactory progress, the student should write a letter of appeal documenting the unusual

circumstance(s) and submit the letter to the Satisfactory Progress Appeals Committee, c/o the Assistant Dean of Student Financial Aid.

For Graduate Students. To maintain satisfactory progress as a graduate student at the University of Rhode Island for federal financial aid purposes, the student must be enrolled in a degree-granting program on at least a half-time basis (i.e., five credits) for each semester during which aid is received. The courses must be at the graduate level and applicable to the student's approved program of study. Master's degree candidates have eight semesters to complete degrée requirements on a fullor part-time basis. Students who are not in residence during the academic-year terms and who have received special permission from the Dean of the Graduate School have 14 summer sessions in which to complete requirements. Two summer sessions totaling at least five credits will be considered one part-time semester; two summer sessions totaling nine credits will be considered one full-time semester. Doctoral degree candidates have 14 semesters in which to complete their degrees, regardless of whether they matriculate with an earned master's degree.

Master's and doctoral students who have completed all course requirements including thesis research shall be considered to be making satisfactory progress at least at the half-time rate if they are registered for at least one thesis credit, or continuous registration for those in the nonthesis option. All students must be enrolled for consecutive semesters until graduation unless an official leave of absence has been approved. If students do not exercise the leave of absence option and fail to register, they are considered to have voluntarily withdrawn.

For further information, see the *Graduate Student Manual* or consult the Student Financial Aid Office.

Graduate Fellowships, Assistantships, and Scholarships

Detailed information (stipends, allowances, tenure, etc.) on graduate fellowships, assistantships, and scholarships is available from the Graduate School Office. They are awarded by the Dean of the Graduate School to students selected from nominations submitted by department chairpersons. Students are advised to request nomination for these awards by the chairperson of the department in which they plan to study or in which they are currently enrolled at the University.

Graduate students on URI fellowships, assistantships, and scholarships are expected to be full-time students (12 credits per semester) in good academic standing and are not eligible for additional employment unless written permission is received from the Dean of the Graduate School.

Graduate students have access to a national computerized database of fellowships and other financial assistance opportunities available to students pursuing advanced degrees, completing dissertation research, or seeking postdoctoral positions.

Fellowships. Fellowships are awarded to graduate students in recognition of their achievement and promise as scholars. They are intended to enable students to pursue graduate studies and research without rendering any service to the University.

Patricia Roberts Harns Fellowships are available to doctoral-level students in selected fields. Recipients are nominated by departments. URI Diversity Graduate Fellowships are awarded by the Dean of the Graduate School to students from minority and underrepresented groups. URI Foundation Minority Fellowships are also available to students from minority and underrepresented groups, with nominations usually made by departments to the Dean of the Graduate School.

Special Fellowships are supported by various industrial firms, private foundations, and individuals, and are usually restricted to students in particular areas of study and research. The stipends and

supplemental allowances of these fellowships are not uniform.

URI Fellows receive a stipend of at least \$8,305 for the academic year and have tuition and the registration fee paid from University funds. URI Fellows are responsible for the remaining fees. Those wishing to be considered for fellowships must have their application file completed no later than February 1.

Graduate Teaching Assistantships and Research Assistantships. Assistantships are awarded to full-time graduate students to provide them with teaching and research training. Assistants may be required to provide service for up to 20 hours per week. Appointments are initiated by department chairpersons. To be eligible for such an appointment, students must first be admitted as degree candidates. Applications for assistantships should be completed by February 1. Appointments are announced in early April.

Departmental Graduate Assistants assist, under supervision, with instructional and/ or research activities of a department. Not more than 10 hours per week will be in classroom contact. Graduate assistant stipends for the 1995-96 academic year range from \$8,305 to \$9,185, depending upon qualifications. In addition, tuition and the registration fee (12 credits maximum) are paid from University funds for each semester of the academic year of the appointment. The student is responsible for the remaining fees. Additional remuneration is given for appointments during the summer, although this cannot be guaranteed. Stipends and tuition remissions for students appointed to partial assistantships will be prorated for the period of the appointment. The student will be responsible for the remainder of the full-time tuition and fees. The same policy applies to assistantships terminated during the academic year.

Graduate Research Assistants are assigned to individual research projects sponsored either by the University or by an outside agency. On supported research

contracts and grants, the graduate research assistants are expected to devote 20 hours per week to research activities. For this they normally receive a stipend ranging from \$8,305 to \$9,185 for nine months. In addition, tuition (12 credits maximum) and the registration fee are paid in each semester of the academic year of the appointment. The student is responsible for the remaining fees. Additional remuneration is given for appointments during the summer months. Stipends and tuition remissions for students appointed to partial assistantships will be prorated for the period of the appointment. The student will be responsible for the remainder of the full-time tuition and fees. The same policy applies to assistantships terminated during the academic year.

Tuition Scholarships. These scholarships cover tuition and registration fee and are awarded by the Dean of the Graduate School from University funds. These scholarships are awarded to qualified students demonstrating financial need. Application forms are available in the Graduate School Office.

UNDERGRADUATE ADMISSION AND REGISTRATION

deally, admission to the University is a process of mutual selection. It is hoped that those students who seek admission will also be the kind of students sought by the University: those who will benefit from the educational opportunities afforded by the University; those who will be stimulated and challenged by doing undergraduate work in an environment that includes scholarly research and graduate study; those who are committed to becoming contributing members of the University.

Admission to the University

Students are selected for enrollment primarily on the basis of their academic competence and without regard to race, sex, religion, age, color, creed, national origin, disability, or sexual orientation, and without discrimination against disabled and Vietnam era veterans.

The University has been authorized under federal law to enroll nonimmigrant foreign students.

All freshmen pursuing four- or five-year degree programs are admitted to University College, a college of advising and academic student services. Many students who are undecided about their choice of major use the year or two in which they remain in University College to explore their interests before declaring a major. Students who have identified their prospective majors are assigned faculty advisors in that area and follow their chosen course of study while in University College. The University evaluates applicants' credentials in terms of their stated prospective majors and the space available in professional programs with limited enrollments.

Admission, Requirements. Admission to the University is competitive, and primary emphasis in the review process is placed on a student's high school record, the quality of courses taken, and the grades earned. Performance on standardized tests (SAT or ACT), extracurricular activities, alumni tradition, and letters of recommendation are considered. The students offered admission for fall 1994 presented an average class rank in the top 30 percent of their high school class, with SAT scores of approximately 1,000 combined.

SAT or ACT tests are required for freshman candidates, but transfer students from another college are assessed mainly on their earlier college records. Each candidate is given individual consideration; however, a minimum of 18 units of college preparatory work is expected: four units in English, three in algebra and plane geometry, two in a physical or natural science, two in history or a social science, two in a foreign language, and additional units that meet the requirements of the college in which the candidate expects to major. All students are encouraged to select their additional units from the arts, humanities and foreign languages, mathematics, social sciences, or laboratory sciences. Candidates for the College of Business Administration, and majors in chemistry, computer science, and physics, must complete four units of mathematics (trigonometry). Candidates for the College of Engineering should select chemistry and physics. Applicants to the Bachelor of Music degree program must audition and must contact the Department of Music for specific requirements.



Students presenting official GED results in lieu of a high school diploma must present secondary school or college records that show successful completion of all the admissions requirements listed here.

International candidates must submit certified copies of original documents (in the original language) and notarized translations in English. Candidates must meet the University's academic requirements. They must show that they possess funds for their first year and that funds for subsequent years will be available. If government or reserve bank permission is required to transfer funds from the student's country to the United States, a notarized copy of the permission is required. No financial aid is available to international students.

Application Procedures. Students should discuss their plans for study at the University with their academic counselors as early as possible to establish realistic goals and program selections. Admissions counselors at the University will be glad to correspond with students about individual problems. Requests for application forms and information should be sent to the Undergradu-

ate Admissions Office, University of Rhode Island, Green Hall, Kingston, RI 02881.

Inquiries from international students concerning nonimmigrant visas, transfers, funding, etc., should be sent to the Office of International Students and Scholars, University of Rhode Island, 37 Lower College Road, Kingston, RI 02881. Inquiries concerning housing should be sent to the Department of Housing and Residential Life (for on-campus residence) or to Off-Campus Housing.

Students are enrolled at the beginning of the fall semester in August and at the beginning of the spring semester in January. High school seniors are urged to submit applications early in their final year of preparatory study, since the University reviews applications on a continuing basis as soon as complete credentials are submitted. Applicants are notified as soon as decisions are made. The closing date for fall term applications is March 1, and most decisions are reported in February, March, and April. The closing date for spring term application is November 1.

Early action is taken on the application of any freshman candidate who has established a superior academic record and above-average scores on the CEEB Scholastic Aptitude Test, and whose potential as a superior student is reflected in the secondary school endorsement. Applications meeting these qualifications which are clearly labeled "early action candidate" are considered on a priority basis if filed before December 15.

Entrance Tests. All freshman candidates for admission must take the Scholastic Aptitude Test (SAT) or the American College Testing Program Test (ACT). Applicants who have been away from formal studies for at least three years should contact the Undergraduate Admissions Office about entrance requirements.

Applicants are encouraged to take the SAT as early as possible in their senior year; delay beyond January materially reduces a candidate's prospects for a timely decision. Full information concerning this test may be obtained from local high schools or by

writing to CEEB Headquarters at P.O. Box 592, Princeton, NJ 08540. Further information regarding the ACTs is available from the American College Testing Program, P.O. Box 168, Iowa City, IA 52243.

Students whose first language is not English are encouraged to submit official Test of English as a Foreign Language (TOEFL) examination results to supplement their SAT verbal scores. International candidates for whom English has not been the language of instruction must submit official TOEFL examination results of 550 or better. The TOEFL examination is administered by the Educational Testing Service, Princeton, NJ 08540.

Interviews. Personal interviews are recommended, but they are not required of all applicants. It would be impossible for the admissions staff to interview all candidates, but individual conferences can be arranged with professional staff and student interviewers on a space-available basis.

Question and Answer Sessions. These are scheduled each week during the year while school is in session. Students and their parents are invited to participate in these meetings to get acquainted with the University. Visitors are asked to phone ahead to confirm available dates. Call 401-792-9800.

Campus Tours. Students conduct daily tours of the campus for visitors, Monday through Saturday, while classes are in session. Group tours for high schools and other organizations may also be arranged. For more information, call 401-792-9800. Tours of the Narragansett Bay Campus and the Graduate School of Oceanography may also be arranged. Call 401-792-6211 for details.

Admissions Inquiry Line. Candidates may check the status of their applications from a touch-tone telephone from November through May, Monday through Friday, from 8:30 a.m. to 4:30 p.m. Eastern time. Instructions are forwarded to candidates when applications are received.

Early Enrollment (Early Admission). Students who have completed their junior year of high school with superior records are eligible for early admission. A part-time study program may be arranged for students who wish to begin college study in their senior year while continuing their high school work. A full-time program may be arranged for those recommended for college admission without completion of the standard preparatory program.

Early admission students will normally have completed: three years of English, three years of mathematics, two years of foreign language, two to three years of social studies or history. Students should be academically competitive within their high school class, have corresponding scores on the College Board PSAT, SAT, or equivalent tests, and the endorsement of their school.

Interested persons should plan with their high school counselor early in their junior year and direct further inquiries to the Undergraduate Admissions Office.

Advanced Standing. Advanced placement for freshmen is granted to students who have completed college-level courses in a high school participating in the Advanced Placement Program and have passed with a grade of 3.00 or better the CEEB Advanced Placement Examination in the following subject areas: art history, art studio (drawing and general), biology, chemistry, computer science (AB), English (language and composition; literature and composition), French (language and literature), German (language), history (European and United States), Latin (Vergil and Catullus-Horace), mathematics (calculus AB and BC), music theory, physics (B; C, mechanics; and C, electricity and magnetism), Spanish (language and literature). For a current list of University courses considered equivalent to advanced placement classes, please contact the Undergraduate Admissions Office.

In addition, students can take proficiency examinations administered by departments of the University to be granted advanced placement. Entrance with ad-

vanced standing can accelerate the completion of degree requirements, or it can enrich the undergraduate program with greater scope for elective or advanced courses.

Transfer Students. Transfer students who have attended, or are attending, another college or university must have official transcripts sent directly from the institution, whether or not they expect or desire credit for such work; their high school record must also be submitted. Transfer candidates must be in good standing and eligible to return to the institutions they attended previously. Credit will not be awarded for course work taken prior to admission to the University which is disclosed after acceptance.

Credit transferred from a community or junior college is limited only by the provision that the student must earn at least half the credits required for the University of Rhode Island degree at a baccalaureategranting institution. No more than 60 credits from a two-year institution may be applied to a bachelor's degree.

A minimum cumulative quality point average of 2.50 is required, but most successful applicants have much higher quality point averages. Certain programs may require a higher quality point average or specific prerequisite courses. Candidates accepted with transfer credit are classified as freshmen, sophomores, juniors, or seniors according to the number of credits accepted for transfer. The transfer of General Education credits is described on page 30. Priority consideration will be given to applicants presenting 24 or more transferable credits. Students may apply to the teacher education programs only after acceptance by an academic department. Some colleges do not enroll new transfer students every semester.

Proficiency Examinations. Students who show evidence of advanced knowledge or who have taken "enriched" programs in high school may be exempt from certain courses and requirements if they take departmental proficiency examinations. A

student who successfully passes such an examination earns credits as well as exemption from the course. However, students who, by successfully passing proficiency examinations, have the General Education requirements waived in writing (Cw), mathematics (M), and/or foreign languages or culture (F) must still complete the specified number of credits for their degree programs.

Upperclassmen interested in taking these exams should contact their academic dean. New students may obtain further information during orientation or from their assigned advisor in University College.

College Level Examination Program. Students who have not been pursuing formal studies for at least three years may take the CLEP General Examinations to demonstrate academically measurable learning acquired in nontraditional ways. URI students must secure prior approval from their academic dean to take the exams for credit, and the exams must be taken during the first semester of a student's enrollment. Transfer students may receive credit from CLEP General Examinations taken prior to enrollment at URI provided that their scores meet URI standards and provided that their academic dean judges that the CLEP credit does not duplicate other transfer credit.

CLEP General Examinations may be taken in the following areas. URI credits for these are shown in parentheses.

	Minimum
	score
English Composition	460
(English Composition	
elective, 3 credits ¹)	
Humanities	420
(Fine Arts and Literature	
elective, 6 credits)	
Natural Science	410
(Natural Science	
elective, 6 credits)	
Social Science	430
(Social Science	
elective, 6 credits)	
Mathematics	
(no credit)	

Academic departments may use CLEP Subject Examinations as proficiency exams to test students' mastery of the subjects taught by the department. A department that judges a CLEP Subject Examination to be a satisfactory proficiency exam decides what credit should be awarded within the department to students who pass the exam, establishes the minimum score for credit, decides whether students must answer the optional essay questions supplied by CLEP, and decides whether students must pass a supplementary department test, such as a lab exam. The following CLEP Subject Examinations are accepted by departments as proficiency examinations. .

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Minimum Minimum

Subject (URI credit)	raw score	percentile
American Government (PSC 113)	47	38th
American History ² (HIS 141, 142)	45	40th
American Literature (ENG 241, 242)	46	37th
Analysis and Interpretati	ion	
of Literature (ENG or WRT 103)	49	43rd
Biology	49 .	47th
(BIO 101, 102)	.,	17 (11
College Algebra-		
Trigonometry	49	50th
(QBA 101)	'/	5041
Educational Psychology	47	40th
(EDC 312)	.,	10011
English Literature	46	38th
(ENG 251, 252)		
General Chemistry	47	45th
(CHM 101, 102, 112,	114)	
General Psychology	47	39th
(PSY 113)		
Human Growth and		
Development	47	38th
(HDF 200 or PSY 232)		
Introduction to Business		
Management	50	50th
(MGT 301)		
Introductory Accounting	j N/A	50th
(ACC 201, 202)		
Introductory Business La	w 51	50th
(BSL 333)		

Introductory Marketing (MKT 301)	50	50th
Introductory Sociology (SOC 100)	48	40th
Western Civilization 1 2	46	52nd
(100-level HIS elective) Western Civilization II ² (100-level HIS elective)	47	52nd

Health Questionnaire. Every newly entering student is provided a health questionnaire from Health Services. These questionnaires must be completed and returned promptly. They provide Health Services with basic health information prior to the student's arrival on campus. Questionnaires are distributed only after admission to the University and play no part in the process of acceptance to the University.

Each entering student must also, in accordance with Section 16-38-2 of the General Laws of Rhode Island, provide a certificate signed by a licensed physician giving the dates of immunizations to protect against rubella (German measles) and rubeola (measles). In addition, the physician must certify that the student has been tested for tuberculosis within the past year. This certificate is included with the questionnaire that is mailed to students. Students failing to comply with this requirement may face sanctions on registration.

New England Regional Student
Program. Through a cooperative plan
sponsored by the New England Board of
Higher Education, students from other
New England states may enroll in designated programs at the University of Rhode
Island which are not offered in their own
states. Certain programs at other New England state universities are open to Rhode
Islanders on a reciprocal basis. Regional
students at the University will be charged
the in-state fee plus a surcharge of 50 percent. If at any time a student transfers out
of the New England Regional Student Program, out-of-state fees will apply.

Details on the operation of this program are available on request from the New England Board of Higher Education, 45 Temple Place, Boston, MA 02111, or from high school guidance offices. All new

undergraduate students apply for regional student status through the Undergraduate Admissions Office as part of the application process. The Office of the Registrar provides information pertaining to this program for students who are already enrolled at the University.

Continuing or returning students claim eligibility by submitting a formal request to the Office of the Registrar prior to the end of the add period of the semester in which regional status is to be effective.

Special Programs for Talent Development. The University encourages the application of economically, socially, and culturally disadvantaged individuals from Rhode Island. To encourage and assist such applicants, the University has instituted recruiting and prematriculation programs. Financial aid is available for students accepted to Talent Development; need is determined by the filing of a Free Application for Federal Student Aid (FAFSA) form.

Interested prospective students should apply to Special Programs for Talent Development during their senior year in high school. Those who have been out of high school for some time and those with an equivalency diploma are also encouraged to apply. Applications and all credentials should be sent to the Undergraduate Admissions Office, University of Rhode Island, Green Hall, Kingston, RI 02881, during the application period between October 1 and March 1.

Readmission. Students formerly enrolled at the University and seeking re-entry may obtain applications for readmission at the Office of the Registrar. Readmitted students must make a \$50 advance deposit. All applications for readmission must be submitted to the Office of the Registrar no later than August 15 for the fall semester, and December 31 for the spring semester.

Registration

All students must register for courses through the Office of the Registrar in order to be properly enrolled.

Early Registration. Matriculated (official degree-seeking) students who meet the eligibility requirements as defined in the *Schedule* of *Courses* generally register in April and October for the following semester. However, freshmen entering in the fall semester may register at specified dates during the summer as part of the summer orientation program. Additional information is available from the Office of the Registrar.

Late Registration. Students are expected to register for courses before classes begin. Those who are unable to do so may enroll as late registrants at the Office of the Registrar during the first two weeks of classes. A late registration fee shall be charged to students who register on or after the first day of classes (see page 18).

Nonmatriculating Students. Such students must contact the Office of the Registrar for permission to enroll and for registration instructions. Registration for nonmatriculating students begins the week before the first day of classes each semester.

Schedule of Courses. The Schedule of Courses is published in March for the fall semester and in October for the spring semester. It is available in the Office of the Registrar. The University reserves the right to cancel courses offered in the Schedule of Courses.

Payment of Fees. Arrangements must be made with the Bursar for complete and timely payment of tuition and/or fees. If during the semester it becomes apparent that a student has not met his or her financial responsibilities to the University, sanctions will be imposed. Sanctioned students are not allowed to receive transcripts or register for future semesters.

¹Three additional credits may be earned by completing a writing sample test administered by the College Writing Program.

² Essays required.

Drop and Add. Students are permitted to add courses through the first two weeks of classes only. Courses offered by the College of Continuing Education may be added, with approval of the instructor, prior to the third class meeting or by the prescribed University deadline, whichever is later.

Students may drop a course according to official procedures determined by the Office of the Registrar before midsemester. However, courses dropped after the end of the second week of classes will not affect the fees that have been assessed (see "Reassessment of Fees" on page 18).

If a student has not dropped a course by the end of the drop period, the instructor must submit a grade. A student may drop a course after the end of the drop period only in exceptional circumstances and only with authorization of the dean of the college in which the student is enrolled.

Auditing. Auditors are persons who have permission to attend a course but are not taking the course for credit. Auditing is not permitted in noncredit courses. An auditor may be admitted to a class on a spaceavailable basis with the consent of the instructor as indicated by the instructor's signature on an audit authorization form; this form must be filed in the Office of the Registrar before the end of the "add" period. The course instructor will determine the extent to which an auditor may participate in class activities. An auditor's name will not appear on official class rosters, and the course will not be noted on the student's grade report or permanent academic record.

A student must be enrolled in at least one other course to be permitted to audit a course.

Flexible Scheduling. Simultaneous enrollment in Kingston classes and College of Continuing Education classes may give scheduling flexibility to students with special time and location restrictions. Students should consult their academic advisor or college dean for further information.

Off-Campus Study. A full-time student who wishes to study at another college or university and use that course work to satisfy graduation requirements at the University of Rhode Island may register for off-campus study. The student must obtain signed approval for the off-campus courses from the dean of his or her college.

Off-campus study includes summer sessions, one or two semesters at another American university, or study abroad. A student may not ordinarily study off campus during the senior year. Students who wish to maintain registration eligibility while studying off campus must register for off-campus study for each semester of absence from the University of Rhode Island, or take an official leave of absence for that period.

Veterans Administration Educational Benefits. Full information describing these benefits can be obtained from your base education officer or from the Veterans Administration Regional Office, 380 Westminster Mall, Providence, RI 02903. The toll-free number for inquiries from within the United States is 1-800-827-1000.

Veterans enrolled in Kingston Campus courses who are eligible to receive VA educational benefits must notify the Office of the Registrar in person. In order to satisfy Veterans Administration regulations, students who receive VA educational benefits must report all changes in academic status to the veterans registration clerk in the Office of the Registrar. Veterans enrolled in courses through the College of Continuing Education must be certified by that college.

Recipients of VA educational benefits are also governed by the same University policies as are all other students and therefore are responsible for completing those procedures described in the *Schedule of Courses* for effecting changes of status (such as the adding and dropping of courses, change of address, and withdrawal from the University).

Transcripts. Students can obtain a copy of their transcripts by submitting a written request to the Office of the Registrar. Transcripts will not be issued to students who have any unpaid financial obligation to the University.

Change of Address. It is the responsibility of the student to report changes of local or home address to the Office of the Registrar or the Department of Housing and Residential Life, as needed.

Required Identification. In order to obtain a University ID card and to be certified for employment, students must have in their possession a photo identification card, such as a driver's license, and a certified copy of their birth certificate. A valid passport will serve both of these purposes.

UNDERGRADUATE PROGRAM REQUIREMENTS

onsistent with its policy of allowing the greatest latitude possible in course selection, the University offers a wide choice to fill its General Education requirements and encourages students to select free electives that cross departmental and college lines.

This section deals with academic requirements, regulations, and opportunities for undergraduates which are Universitywide rather than college-related.

The University administration may alter, abridge, or eliminate courses and programs of study. While every effort is made to keep this bulletin current, not all courses and programs of study listed may be available at the time of the student's matriculation. Similarly, course and program requirements may be changed from time to time. In all cases, every effort will be made to accommodate individual students whose exceptional circumstances may make it difficult or impossible to meet the changed requirements. Changes in the academic calendar may also be made when deemed to be in the best interests of the institution.

General Education Requirements

The University of Rhode Island believes that all undergraduate students, regardless of their degree programs, need experience in the study of fundamentals which builds on the student's previous education and continues through the undergraduate years and beyond. Thus, all bachelor's degree students follow the same University-wide General Education requirements. In addition, beginning in January 1996, all entering freshmen and new transfer students with less than 24 credits are required to take URI 101 Traditions and Transformations: A Freshman Seminar in their first semester (see page 280).

General Education is that part of the undergraduate curriculum in which students explore a broad spectrum of intellectual subjects, approaches, and perspectual



tives. The General Education component of the curriculum aims to help accomplish three goals: 1) to develop further the essential English communication abilities on which advanced studies depend; 2) to offer experience in five broad subject areas: fine arts and literature, letters, mathematics, natural sciences, and social sciences; and 3) to expose the student to a foreign language or culture.

Corresponding with these goals, the General Education program is divided into the following components:

English Communication. Six credits in English communication, at least three of which must be in a course designed specifically to improve written communication skills

Fine Arts and Literature. Six credits in courses related to historical and critical study of the arts and literature as well as creative activity

Foreign Language or Culture. Six credits or the equivalent in a foreign language or foreign culture

Letters. Six credits in courses that address fundamental questions about the human condition, human values, and ways of communicating these values

Mathematics. Three credits in a course specifically designed to provide training in college-level quantitative skills and their application

Natural Sciences. Six credits in courses in physical, chemical, or biological sciences

Social Sciences. Six credits in courses related to the study of the individual (development and behavior) and society.

Specific courses that may be used to meet these requirements are listed in the following groups:

English Communication: Writing (Cw)—BGS 100; CMS 101; ELS 112, 122; ENG 103; HPR 112; WRT 101, 103, 123, 201, 227, 301, and 333. General (C)—CMS 101; COM 101 and 103; HPR 111; PHL 101.

Fine Arts and Literature (A): AAF 247, 248; ARH 120, 251, 252, 284, 285, 359, 364, 374; ART 101, 103, 203, 207, 215, 231, 233; CLA 391, 395, 396, 397; CLS 160, 250, 335; COM 231; ENG 160, 241, 242, 243, 247, 248, 251, 252, 260, 263, 264, 265, 280; FRN 327, 328, 391, 392, 393; GER 325, 326, 392; HPR 101, 105; ITL 325, 326, 391, 392, 395; LAR 201; MUS 101, 106, 111; PLS 233; RUS 325, 326, 391, 392; SPA 305, 306, 307, 308, 325, 391, 392, 393; THE 100, 181, 351, 352, 381, 382, 383.

Foreign Language or Culture (F): This requirement shall be fulfilled in one of the following ways: 1) a two-course sequence in a language previously studied for two or more years in high school through at least the 103 level in a living language or 301 in a classical language appropriate to a stu-

dent's level of competence (e.g., 102 and 103, 102 and 301; 131 and 103; 103 and 104; 301 and 302); 2) demonstration of competence through the intermediate level by a proficiency examination¹ or by successfully completing the 104 level in a living language or the 302 level in a classical language; 3) course work in a language not previously studied (or studied for less than two years in high school) through the beginning level; 4) study abroad in an approved academic program for one semester; 5) majoring in a foreign language; 6) course work selected from one foreign culture cluster taken, if possible, in the same or successive semesters from the following list: Africa, AAF 250, APG 250, 313, HIS 388, PSC 408; American Indian, APG 303, 311, HIS 344; Ancient Greece and Rome, ARH 354, CLA 391, 395, 396, 397, ENG 366, GRK 109, 110, HIS 111, 303, PHL 321; East Asia, HIS 171, 374, 375, PHL 331, RLS 131; France, ARH 265, FRN 392, 393, HIS 330; Germany, GER 392, HIS 125, 326, 327; Ireland, APG 325, IRE 391, 392, WMS 333; Israel, HIS 378, PSC 321; Latin America, APG 315, HIS 180, 381, 382, 384, SPA 393; Medieval Europe, ARH 356, HIS 112, 304, ITL 395, PHL 322; Middle East, HIS 176, 177, 376, 377, PSC 321; Modern Civilization, ENG 252, HIS 123; Modern Europe (Early), ARH 359, HIS 113, 306, 307. 314, PHL 323; Modern Europe, ARH 363, HIS 114, 310, 311, 315, PSC 401; Renaissance in Europe, ARH 365, HIS 305, ITL 391, SPA 391; Russia and the Soviet Union, HIS 132, 332, 333, RUS 391, 392, PSC 407; URI in England, ENG 397, HIS 397. In addition, HPR 106 may be used by students in the Honors Program to fulfill this requirement. Formally registered international students and students with a recognized immigrant status will be exempt from the foreign language or foreign culture requirement.

Letters (L): AAF 150; APG 327; BGS 392; CLS 235; COM 200, 205, 210; HIS 111, 112, 113, 114, 115, 116, 118, 123, 125, 132, 141, 142, 145, 150, 171, 176, 177, 180, 304, 305, 306, 307, 309, 310, 311, 315, 321, 323, 324, 327, 332, 333, 340, 341, 342, 346, 353, 354, 360, 372, 376,

377, 381, 382, 384, 398; HPR 104, 107, 203; JOR 110; LAR 202; LET 151, 351; NES 200; NUR 360; PHL 103, 235, 204, 210, 212, 217, 314, 318, 319, 321, 322, 323, 324, 325, 328, 331, 346, 355; PSC 240, 341, 342; PSY 310; RLS 111, 125, 126, 131; WMS 333.

Mathematics (M): BAC 101, 102; CSC 201; HPR 108; MTH 107, 108, 111, 131, 132, 141, 142; STA 220.

Natural Sciences (N): APG 201; AST 108; AVS 101; BGS 391; BIO 101, 102; BOT 111; CHM 100, 101, 102, 103, 105, 112, 114, 124, 191, 192; FSN 207; GEL 100, 102, 103; HPR 103, 109; NRS 212; OCG 123, 401; PHY 109, 110, 111, 112, 130, 140, 185, 186, 213, 214, 285, 286; ZOO 111, 286.

Social Sciences (S): APG 200, 202, 203, 220, 319; BGS 390; CNS 220; COM 220; ECN 100, 201, 202, 381; EDC 102, 312; ENG 232, 330; GEG 100, 104; HDF 220; HLT 123; HPR 102, 110; HSS 350; LIN 200, 202, 220; MGT 110; NRS 100; NUR 150; PSC 113, 116, 201, 221, 288; PSY 103, 113, 232, 235, 254; REN 105; SOC 100, 102, 204, 206, 212, 214, 216, 224, 238, 240, 241, 242, 316, 330, 336; TMD 224; WMS 150.

Students in the Honors Program can receive General Education credit for honors sections of courses that have been approved for General Education credit.

Transfer students can receive General Education credit for courses taken at other institutions as long as such credits are in courses equivalent to courses given General Education credit at the University of Rhode Island.

Students must meet the curricular requirements of the colleges in which they plan to earn their degrees. Some colleges require that students select specific courses from the lists given for the various General Education Components. Therefore, students must refer to the requirements specified for their programs (pages 41–102).

In the Colleges of Arts and Sciences and Human Science and Services and for the Bachelor of General Studies, credits within a student's own major may not be counted toward General Education requirements in Fine Arts and Literature, Letters, Natural Sciences, or Social Sciences. In other colleges, credits within a student's professional college may not be counted toward any General Education requirements. However, courses that serve as prerequisites for a major can be used to fulfill the General Education requirements.

Other Academic Requirements

Certain basic courses are required in many curriculums for transfer from University College into a degree-granting college in the junior year. These are listed in the curriculums of the individual colleges.

The responsibility for meeting all course and credit requirements for the degree must rest with each individual student.

Students who desire to accelerate their programs and receive credit for courses taken at other institutions or during Summer Session or in the College of Continuing Education must have prior approval from their academic deans.

Minor Fields of Study

Undergraduate students may declare a "minor" field of study. Requirements for a minor may be satisfied by completing 18 or more credits in: 1) any one of the University-approved minors; 2) a curriculum other than the student's major; or 3) related studies from more than one department under the sponsorship of a qualified faculty member. Descriptions of approved interdepartmental minors follows. Descriptions of requirements for approved departmental minors may be found in the departmental sections.

To declare a minor, a student must have the approval of the department chair-person of the minor field of study and of the dean. Faculty sponsorship is required for the third option listed above. Students

¹ Students who fulfill this requirement through an examination cannot eam course credit for graduation. Students who earn less than six credits in fulfulling the requirement should apply credits to the elective or major areas.

in the College of Business Administration need the approval of the Scholastic Standing Committee for the third option.

A minimum quality point average of 2.00 must be earned in the minor courses, and at least 12 of the 18 credits must be at the 200 level or above. At least half of the credits required for the minor must be earned at the University of Rhode Island. General Education requirements may be used for the minor, but no course may be used for both the major and minor field of study. Minor courses may not be taken on a pass-fail basis.

Application for the minor must be filed in the academic dean's office no later than the beginning of the student's final semester or term.

Interdepartmental Study

Students are encouraged to develop interests across departmental lines. A number of such programs are available both as areas of interest or minors, and as degree programs. The interdepartmental minors are given in the following list; for interdepartmental majors in comparative literature studies, consumer affairs, human science and services, and women's studies, refer to the Index at the back of this bulletin. For degree progams in marine and environmental studies, see page 32.

African and Afro-American Studies. Students who declare African and Afro-American studies as a minor are required to take two core courses: AAF 201 and 202 (six credits). In addition, students select four electives (12 credits) from the following: AAF 250, 360, 390, 410; APG 313; COM 333; ECN 404; ENG 247, 248, 362, 363, 364, 474; HIS 150, 384, 388; and PSC 408. Students who want to use other courses that have as their central focus some aspect of the black experience may do so with permission from the program director.

Biology. Students who declare biology as a minor must take BIO 101 or BOT 111; BIO 102 or ZOO 111; and MIC 211 or MIC 201. The remaining courses may be selected from BCH 311 and any BOT, MIC,

or ZOO course. At least 18 credits are required; at least 12 of the 18 credits must be taken at the 200 level or above.

Comparative Literature Studies. Students who declare comparative literature studies as a minor must earn 18 credits distributed as follows: six credits in comparative literature studies at the 200 level or above; 12 credits from literature courses in comparative literature studies, English, or languages, of which six credits must be in one national literature either in the original language or in translation. Students majoring in English or languages may not count courses in their major toward this minor. For a description of the degree program in comparative literature studies, see page 49.

Consumer Affairs. Students who declare a minor in consumer affairs are required to complete 18 credits including CNS 220, 320, and 420. The remaining nine credits can be selected from CNS 210, 321, 340, 342, 350, 415, 422, 440, 457, or other courses approved in consultation with CNS faculty. For a major in consumer affairs, see page 85.

Film Studies. Students who declare a minor in film studies must complete 18 credit hours of courses in which film or video is the primary text of study, including a minimum of three credits in each of the three following approaches to film study: Aesthetic (ARH 374, ART 215, 316); Cultural (AAF 300H, HIS 358, ITL 315); and Literary (ENG 300, 346). Experimental and special topics or other irregular courses in film may be used to fulfill requirements for this minor in some particular way specified in writing by the instructor of the course.

Gerontology. The program in gerontology is a University-wide program that promotes study, teaching, and research in aging. It also maintains relationships with state and local agencies serving the older population of Rhode Island. This affords opportunities for research, internships, and field experiences to students interested in the problems of aging.

The adulthood and aging option within the Bachelor of Science program in human development and family studies is the recommended major for gerontology. There is also the opportunity for students taking their major studies in a number of areas to do a less specialized study in aging by declaring a minor in gerontology. This must be done not later than the first semester of the senior year. It requires 18 or more credits in aging-related studies approved by the program in gerontology and the college in which the student is registered.

HDF 220 (Gerontology: Theory and Application) is required for either specialization. It also meets a social science requirement in General Education. Undergraduate gerontology courses include: CNS 342; DHY 462; FSN 395; HDF 221, 420, 431; and SOC 438. Also relevant are HDF 380, 421, 450; NUR 349, 360; ZOO 242; and the University Year for Action.

It is important to take courses that fulfill degree requirements from the beginning. Students who wish to specialize in aging are advised to contact the program in gerontology early in their university studies.

International Development. The international development minor is available to undergraduates interested in employment overseas or in domestic enterprises with international operations.

Students choosing the international development minor must complete 18 credits, with a maximum of six credits at the 100 or 200 level. Students must complete the following: 1) RDV 300 (three credits); 2) language or culture (six to nine credits), to be met by the completion of at least six language credits through the intermediate level (103 or 104) or placement in the conversation and composition level (205 or 206) and completion of at least six credits in the same language or culture cluster. Placement for course work is determined by the Educational Testing Service exam as administered by the University's Department of Modern and Classical Languages and Literatures in the following languages: French, Spanish, German, and Russian. The University also offers Portuguese and selected other languages that, with permission, could satisfy the requirement. Six credits are allowed in the General Education requirements for language and culture; 3) an approved internship (three to six credits) providing international development experience during the junior or senior year (RDV 487); and RDV 495 (three credits) of an advanced-level seminar. Course descriptions for RDV 300, 487, and 495 can be found on page 269.

The College of Resource Development administers the program; interested students should contact Professor David Abedon, Rodman Hall, or Donald McCreight, 131 Woodward Hall.

Justice, Law, and Society. Students declaring a minor in justice, law, and society must complete a minimum of 18 credits from among the courses listed below. At least three credits must be completed in each of the three groups. The courses marked with an asterisk have prerequisites not included in this program; students are responsible for completing these prerequisites prior to enrolling in the course. Other courses, such as topics courses, may be approved for credit by the program coordinator. Interested students should contact Professor Leo Carroll, Department of Sociology and Anthropology, 512 Chafee. Law: APG 326; ECN 337; PHL 430;* PSC 288,* 369,* 471,* 472.* Social Justice: AAF 201; APG 311, 322; ECN 305,* 381;* HIS/AAF 150; HIS 328, 344, 346, 349, 351,* 352;* PHL 210, 217, 314,* 318;* PSY 480;* SOC 240, 242, 316,* 413,* 428,* 438,* 472;* WMS 150, 310. Criminal Justice: ECN 403; HDF/SOC 437;* PSC/SOC 474;* PSY 254,* 261, 335,* 460, 465,* 466; SOC 314,* 330,* 331,* 420.*

New England Studies. Students who declare New England studies as a minor must take either NES 200 or 300 and elect at least one course from each of the following four categories. Aesthetic Dimensions: ART 263; ENG 340, 347. Cultural Patterns: APG 317; ENG 337; PSC 221. Historical Dimensions: HIS 335, 346, 362. Physical Dimensions: BOT 323, 418; GEL 101; NRS 301, 302. Permission can be obtained from the Committee for New England Studies to use any rotating topics course, seminar, etc., whose focus is on some aspect of New England as a substitute for any of the above courses.

Special Populations. This interdepartmental minor gives students the opportunity to explore the theory and gain practical experience through working with people who have special needs. This includes people who are handicapped (physically, emotionally, mentally, or educationally) or are different (socioeconomically, behaviorally, culturally) and as a result have special needs.

A minimum of 18 credits may be earned by taking the required courses (HDF 200 or PSY 232; PSY 442), a minimum of three credits in supervised field experience, and a minimum of nine credits of selected electives.

Courses are chosen in consultation with an advisor from one of the participating departments: Communication Studies; Education; Food Science and Nutrition; Human Development and Family Studies; Nursing; Physical Education and Health; Psychology; Sociology and Anthropology; Textiles, Fashion Merchandising, and Design; or Theatre. The College of Human Science and Services administers the program. For information, interested students should contact Associate Dean Leo O'Donnell, acting program head.

Textile Marketing. This undergraduate interdepartmental curriculum may be pursued through the College of Human Science and Services.

Textile marketing managers are responsible for planning and directing the flow of textile products from the manufacturer to the consumer. The major, which provides a strong background in both textiles and marketing, is designed to give students the opportunity to explore the areas of styling and design, manufacturing, market research, consumer behavior, advertising, promotion, fashion, and sales. The specific requirements of the curriculum can be found on page 90.

Urban Affairs. The undergraduate program in urban affairs consists of five different interdepartmental degree curriculums within the College of Arts and Sciences, the College of Human Science and Services, and the College of Resource Devel-

opment. The curriculums provide students with a general understanding of contemporary urban society and the opportunity to pursue specialized study of urban problems and prospects from the perspective of varied disciplines, whatever the students' interests and career objectives.

The five majors are: 1) urban social processes, 2) policy formation, and 3) spatial development, in the College of Arts and Sciences; 4) home economics in the urban environment, in the College of Human Science and Services; and 5) resource development in the urban environment, in the College of Resource Development. Curriculum requirements are detailed in the appropriate college sections in this bulletin.

The Urban Affairs Program is coordinating its offerings with the Department of Social Sciences at the Community College of Rhode Island. Students at the junior college are encouraged to consult with their advisors if they wish to transfer to any one of the majors in the College of Arts and Sciences.

The Urban Affairs Program is administered by the graduate program in community planning, in the College of Resource Development. The appropriate department certifies completion of the major requirements for the appropriate undergraduate degree. A member of each college serves as advisor for the different majors and provides interested students with information.

Marine and Environment-Related Programs

Interest in marine science and oceanography at the University dates back to the mid-1930s. Over the past three decades, this strong emphasis on marine studies has extended to environmental topics, developing into an array of undergraduate programs in the natural, physical, and social sciences.

There are over 20 majors with a marine or environmental focus offered by departments in three of the colleges of the University. In the College of Arts and Sciences, the departments are: Biochemistry, Microbiology, and Molecular Genetics; Biological Sciences; Chemistry; Geology; Marine

Affairs; and Physics. In the College of Resource Development, the Departments of Fisheries, Animal and Veterinary Science; Food Science and Nutrition; Natural Resource and Environmental Economics; and Natural Resources Science offer marine and environment-related programs. Finally, in the College of Engineering the following departments offer such programs: Chemical Engineering; Civil and Environmental Engineering; Mechanical Engineering and Applied Mechanics; and Ocean Engineering. Several of the majors are offered jointly with the Graduate School of Oceanography.

Working with academic advisors, students can identify their majors and select the courses best suited to their individual academic objectives and career goals. A list of relevant courses appears under the heading "Marine and Environmental Topics" in the section "Courses of Instruction."

Preprofessional Preparation

Competition for places in graduate professional schools is keen, and a superior academic record throughout college is necessary for admission to these schools. Since requirements for the professional schools vary in their "essential" and "recommended" subjects, the student should consult the catalog of the professional school and then plan his or her undergraduate program accordingly.

Those seeking careers as social workers can enroll as majors in sociology, including in their curriculum the social welfare courses. A basic foundation for graduate study, whether directed toward college teaching or research careers, can be provided through any of the liberal arts or science majors. The Bachelor of Arts curriculum provides specific majors for those planning to become journalists or public school teachers.

Prelaw Studies. For students who plan professional study of law, guidance and program advice are provided by departmental advisors assigned in University College and by major advisors within various departments and colleges.

Students interested in law school should consult the Prelaw Handbook, prepared by the Association of American Law Schools and the Law School Admissions Council. The association finds it inappropriate, given the wide range of a lawyer's tasks, to prescribe either a set of prerequisite courses for prelaw students or preferred major departments. Rather, it recommends that students choose their majors according to their own individual intellectual interests and "the quality of undergraduate education" provided by various departments and colleges. "Shortly stated, what the law schools seek in their entering students is ... accomplishment in understanding, the capacity to think for themselves, and the ability to express their thoughts with clarity and force." The association emphasizes that "the development of these fundamental capacities is not the monopoly of any one subject-matter area, department, or division."

Plan for Early Contingent Admission to the Master of Science (M.S.) Degree Program in Physical Therapy. This plan incorporates the prerequisites for the master's degree in physical therapy in anatomy, chemistry, mathematics, physics, physiology, and psychology with bachelor's degree requirements in a related discipline during the first three years of study. With a proper use of electives, students can complete all physical therapy prerequisites and first-year physical therapy courses as part of a participating B.A. or B.S. degree program. This plan is currently available for the B.S. degree programs in human science and services and physical education.

According to this plan, application to the master's program in physical therapy may occur in the third undergraduate year. Successful applicants are selected for contingent admission to the physical therapy program at the beginning of the fourth undergraduate year, with course work taken in the fourth year applied to the B.A. or B.S. degree. A bachelor's degree and a 3.00 average in physical therapy courses are required to attain full graduate status and continue in the physical therapy pro-

gram. Admission to the physical therapy program is highly competitive, and students are advised to maintain close contact with a pre-physical therapy advisor. Students interested in graduate programs in physical therapy at other institutions should consult with those institutions reqarding admission requirements. Additional information concerning all admissions requirements for the program in physical therapy is available in the section "Graduate Programs."

Teacher Education Programs. The University of Rhode Island offers a variety of academic programs leading to teacher certification at both the undergraduate and the graduate levels. Undergraduate teacher education programs are offered by departments in the College of Arts and Sciences, the College of Human Science and Services, and the College of Resource Development. The Council for Teacher Education, through the Office of Teacher Education, provides the coordination, planning, evaluation, and promotion of all teacher education programs at the University. The following programs are offered at the undergraduate level: early childhood education, elementary education, physical education, music education, resource development education, and secondary education. To find specific program descriptions and information, refer to the Index at the back of this bulletin.

Admission to the Teacher Education Programs. Students interested in undergraduate teacher education programs are required to apply for admission to the Office of Teacher Education. Applications for admission to teacher education programs are normally submitted during the sophomore year. Applications will be reviewed by a departmental screening committee based on the following criteria: 1) recommendations from faculty and others who have knowledge of the candidate's experience or interest in working in education; 2) a writing sample expressing career goals, experience in working with children, and expectations as a teacher; 3) scores on a standardized test(s) of basic skills; 4) the student's academic record, including a cumulative quality point average of 2.50 or better and grades in the academic major or specialization averaging 2.50 or better. Individual departments or programs may also require an interview.

Transfer students should be advised that academic work completed at the University of Rhode Island is a primary factor in the admission decision. Therefore, students must complete one year of work at the University before they can be considered for admission to the teacher education programs. This may extend the time required for degree completion.

Admission to some programs is competitive, and applicants meeting the minimum criteria described above may not be admitted because of limited space. For additional information, students should consult as early as possible with the specific department in which they wish to enroll or with their University College advisor.

Students denied admission can petition the department for a review of the decision. In such cases, the departmental screening committee meets to consider the appeal. Only exceptional circumstances will lead the appeal committee to override the academic record criteria (2.50 cumulative quality point average and 2.50 in the academic major or specialization).

Applicants who fail to gain admission should seek counsel from an appropriate advisor. Students may reapply for admission to a teacher education program but should understand that this may delay their anticipated graduation date.

Admissions to teacher education programs at the graduate level are governed by the Graduate School in consultation with academic departments. Students with a bachelor's degree should consult the section "Graduate Programs" in this bulletin and departments regarding individual program requirements.

Teacher Certification. A teaching certificate is, for all practical purposes, a license to teach in a given state, at a specific level, and in a certain type of job. Rhode Island, like other states, requires its public ele-

mentary and secondary teachers to hold certificates to ensure that students are taught only by persons who meet specified standards of preparation, health, citizenship, and moral character.

Graduates of a state-approved teacher education program at the University are eligible to receive an initial teaching certificate in Rhode Island and in over 25 other states through the Interstate Certification Compact (ICC). However, states will grant certification through the ICC only for certifications offered by the state. For example, a state that does not have a certification program in early childhood education (nursery school through Grade 2) will not grant a certificate in that area to a graduate of the University's program in early childhood education without reviewing the student's transcript to see if it meets that state's quidelines for elementary education. Therefore, students interested in applying for certification in states other than Rhode Island should always contact the Department of Education in that state and ask: 1) if the state has the area of certification the student is interested in pursuing at URI; and 2) if the state grants initial teacher certification under the ICC to students who have graduated from a Rhode Island state-approved teacher education program. Also, the student should ask the department to mail the state's application materials for certification. If the state is a member of the ICC, graduates of URI are generally entitled to initial certification for a period of five years following their date of graduation. After receiving another state's certification application, the applicant should read the directions for certification carefully and submit all required documentation.

If the state in which the applicant is requesting certification is not a member of the ICC or does not have certification for the applicant's area of study, he or she should ask that state's Office of Teacher Certification to evaluate his or her transcript and indicate any courses or experiences the applicant would need for certification in that state.

Premedical, Predental, and Preveterinary Programs. The URI Premedical Advisory Committee (PMAC), also known as the Premedical, Predental, and Preveterinary Advisory Committee, oversees these programs. The URI premedical advisor (PMA) acts as the committee chairperson. Committee members offer students academic counseling and information on the admissions process. In addition, the PMAC and the PMA periodically review students' progress, assessing their prospects for admission.

It is advisable for students to select their undergraduate majors based on their own interests and abilities. Students should select their undergraduate majors carefully with appropriate advice from the PMAC. Students should also make sure that their undergraduate majors provide a foundation of knowledge necessary for the pursuit of several career alternatives. It is not advisable for students to select their undergraduate majors solely or primarily to enhance their chances of being accepted by a professional school.

Students interested in studying in any of the following programs must register with the PMAC secretary, Biological Sciences Building, Room B106.

General Requirements. For students preparing to apply to postgraduate colleges of medicine, dentistry, or veterinary medicine, the program of study includes courses in the humanities, English and literature, the basic sciences, mathematics, the social sciences, and communication. These courses will fulfill the basic admissions requirements.

It is strongly recommended that students complete the required course work at the same time they meet undergraduate degree requirements. Any major or concentration is acceptable, providing that the minimum requirements for admission into a professional school are fulfilled. Ideally, these requirements should be substantially completed before a student takes the national admission test (either the MCAT, DAT, VAT, or GRE) in the spring semester of the junior year.

Most students in these programs major in animal biology (zoology) or in a related field, such as microbiology, chemistry, pharmacy, or another health-related science. Students choose these majors primarily because these are the subjects that interest them most, but also because, nationally, students with these majors represent the largest number of accepted applicants. However, other majors are acceptable.

Many of the course requirements can be met by fulfilling the General Education or Bachelor of Liberal Studies requirements, but professional schools are usually rather specific concerning minimum requirements in the basic sciences and mathematics.

Recommended courses for fulfilling the basic admissions requirements follow. Only the minimum required number of credits is shown.

English and Literature: 12 credits, including one writing course (e.g., WRT 101) and one year of literature.

Animal Biology: 8–10 credits chosen from among the following courses (or their equivalents). Chordate anatomy (ZOO 102), general zoology (ZOO 111), general animal physiology (ZOO 201), animal development (ZOO 202), basic genetics (ZOO 104 or BOT 352 or ASP 352), and vertebrate histology (ZOO 327 and 329).

Chemistry: 16 credits, including general inorganic (CHM 101, 102, and lab, CHM 112, 114) and organic (CHM 227, 228, and lab, CHM 226, or their equivalents).

Physics: eight credits, including PHY 111, 185, 112, 186, or PHY 213, 285, 214, 286, or their equivalents.

Mathematics: six credits through calculus, MTH 131 and 132, or MTH 141.

Social and Behavioral Studies: six credits in sociology (SOC 100, 300, or 424) and psychology (PSY 113, 232, or 300).

Modern Foreign Languages: completed through the intermediate level.

Electives: eight credits. These optional courses may be selected from upper-level science courses that might have relevance to a professional school's curriculum or they may be selected from humanities courses. Because of the structured and particularized nature of the professional curriculum, upper-level courses in the humanities will help to balance the scientific portion of the undergraduate program. Courses in philosophy, history, fine arts, theater, economics, mathematics, and foreign language and culture are helpful in developing problem-solving and communication skills. They are all educationally fulfilling, and are crucial to the success of an educated person pursuing a professional career.

Applying to Professional Schools. Prior to submitting an application to a professional school, each candidate's credentials are evaluated by the Premedical Advisory Committee. By the first semester of the junior year, each applicant must provide the PMAC with the following items in writing:

- 1. A request from the applicant to the PMAC for a letter of evaluation in support of his or her application to a medical, dental, or veterinary school.
- An official report of the applicant's SAT scores from the testing agency or from his or her high school or other secondary school.
- Official, recent academic transcripts of all college courses taken at URI and elsewhere.
- Official reports of scores on the appropriate admission test (MCAT, DAT, VAT, or GRE) sent directly to the PMAC from the testing agency.
- 5. An autobiography that includes a commentary on the way the applicant's career goals have developed.
- A description of all extracurricular activities.
- 7. A description of all honors bestowed on the student.
- 8. A description of volunteer hospital, dental, veterinary, or other health-related work.

A minimum of three letters of evaluation written by persons who can evaluate candidly the applicant's experience and ability to engage in professional and scientific study.

In addition, a series of personal interviews with members of the PMAC in the spring semester of the junior year must be included in the final evaluation of the applicant's candidacy. As a result of this evaluation, which takes place in the spring semester of the junior year, the PMAC decides either to write a letter of evaluation in support of a candidate's application or to advise the candidate on an alternative plan.

Premedical Studies. Approximately 85 percent of URI applicants recommended by the PMAC are admitted into medical schools of their choice.

The average admission rate to medical schools in the United States is only about 40 percent. Competition is very strong, and it is wise to plan for an alternate career. Candidates should become familiar with the requirements for admission to the medical schools to which they expect to apply. These are listed in *Medical School Admission Requirements*, published annually by the Association of American Medical Colleges. Copies of this reference and the requirements of certain medical schools are available from the PMAC Secretary, Room B106, Biological Sciences Building. Phone: 401-792-2670.

Medical schools generally require at least a 3.00 quality point average and high scores on the required Medical College Admission Test (MCAT), taken preferably in the spring semester of the third undergraduate year.

All candidates must have personal interviews with the PMAC. Normally these interviews take place during the spring semester of the third undergraduate year.

The University of Rhode Island–Brown University Early Identification Program for Sophomores. This is a plan for the early identification and acceptance of URI students into the School of Medicine at Brown University. These students must be

Rhode Island residents who are highly motivated, exceptionally qualified, and interested in studying medicine at Brown. An eligible sophomore must have a cumulative quality point average of at least 3.30 after having completed not more than three semesters of academic work at URI.

In December of each year, all eligible students must apply in writing to the URI Premedical Advisory Committee for nomination to this program. In early February, the PMAC conducts a careful evaluation of each applicant's academic and personal qualifications. The committee then nominates as many as three individuals from this group of applicants on the basis of an excellent record, exceptional promise as a URI premedical student, Rhode Island residency, and a desire to study medicine at Brown.

For each nominated student, a completed application and the committee's letter of evaluation are forwarded to the Dean of Medicine at Brown University. Final decisions to accept applications are made by the admissions committee at the Brown School of Medicine.

When URI candidates are accepted into the program, they assume the same status as their Brown counterparts, and they continue their studies at URI. They are free to major in any field of study, so long as they continue to show academic excellence while they complete the required premedical courses. As URI undergraduates, they are invited to take one or two of their premedical courses on the Brown campus with their future classmates, and are included in colloquiums and various social events sponsored by the Brown Medical Student Society.

In the spring of their senior year, before students in the program graduate from URI, they are considered for promotion into the first year of medical studies at Brown. This is the same promotion process that is required of all Brown medical students. Academic performance, interviews with members of the admissions committee, and recommendations from faculty and others are reviewed at this time. When they receive their promotion, students in

the program become first-year medical students at Brown University.

In order to obtain a letter of evaluation in support of an application, each candidate must have personal interviews with the PMAC. Normally these interviews take place during the spring semester of the third undergraduate year. Competition for admission into schools of veterinary medicine is exceptionally strong. Therefore, evidence of high motivation and an outstanding academic record are absolutely essential.

URI Postbaccalaureate Preprofessional Programs. There are two nondegree programs at URI for potential premedical, predental, or preveterinary candidates who have already earned degrees, either from URI or from other colleges or universities.

Candidates must first consult with the URI premedical advisor. The PMAC secretary will arrange for an appointment (Room B106, Biological Sciences Building, 401-792-2670). Candidates must register in writing at the secretary's office.

Program A (one to three years) is designed for students who made a late decision to enter professional school and wish to complete the basic admission requirements prior to submitting an application.

Program B (two to four semesters) is designed for the applicant who has completed the basic admissions requirements and has not yet earned grades that are competitive with other applicants. The individual's specific needs will be met by courses selected in consultation with the premedical advisor.

In order to complete the course work in either of these programs, a candidate should register with the URI Office of the Registrar as a nondegree postbaccalaureate student.

Special Academic Opportunities

English as a Second or Foreign Language. At the University, English as a Second or Foreign Language is not remedial. Nonnative-speaking students who want to continue to perfect their English so as to enhance their chances of success in their

studies may do so by taking English Language Studies 112 and 122, two regularly offered courses that count toward the written communication requirement in the General Education program. Students who need these courses are strongly urged to take them in their freshman year.

In addition to these two three-credit courses, the University offers one-credit, content-based English language study sections (ELS 201), under the auspices of the English Language Fellows Project. These one-credit sections may be repeated, in conjunction with other courses, a total of 12 times. Thus, it is possible for students who speak other languages to continue studying English, for credit, throughout their years as undergraduates.

For more information about English language studies, contact the Department of English, Independence Hall. Phone: 401-792-5931

Honors Program. The University Honors Program offers motivated students opportunities to broaden their intellectual development and to strengthen their preparation in major fields of study. The program consists of courses in analytical thinking skills which prepare academically talented students to get the most from classes throughout their undergraduate years, a colloquium that brings distinguished authorities to campus from across the nation, special tutorials in major concentrations of study, and independent research projects under the guidance of a faculty sponsor. Honors courses at the 100 and 200 levels treat general topics and usually count for General Education credit in particular divisions. Those at the 300 and 400 levels are more specialized and often are used to fulfill the requirements of a major.

Eligibility standards are established by the Honors Program and Visiting Scholars Committee. Students may take honors work if they meet the following standards: freshmen must have graduated in the upper 10 percent of their high school class or must submit a letter of recommendation from their high school principal or guidance counselor; sophomores, juniors, and seniors must have earned at least a 3.20

cumulative quality point average. (Under special circumstances, these eligibility requirements may be modified with the permission of the Honors Program director.)

Eligible students may participate in the Honors Program in one of two ways: they may take honors courses on an occasional basis, registering for any number or pattern of courses that interest them; or they may do honors work on a regular basis, meeting the specific requirements to receive the transcript notation "Completed the University Honors Program." In the latter case, a student must begin honors work no later than the beginning of the sophomore year and must complete a minimum of 15 honors course credits that meet the following requirements: 1) three credits at the 100 level; 2) three Honors Colloquium credits (HPR 201 or 202); 3) three credits at the 300 level (tutorial); 4) six credits at the 400 level, which may be either six credits of the Senior Honors Project (HPR 401, 402) or three credits of the Senior Honors Project (HPR 401) and three credits of the Senior Honors Seminar (HPR 411); and 5) a 3.20 quality point average for honors courses and a 3.20 cumulative quality point average.

See page 124 for a list of honors courses.

National Student Exchange Program. The National Student Exchange (NSE) program offers URI students the opportunity to study at more than 100 participating state colleges and universities in 46 states paying in-state rates or URI tuition while maintaining their status as URI students. NSE offers the opportunity to explore new geographical areas, experience academic diversity, and study under different educational and social circumstances in various parts of the United States. Financial aid is available to participants in this program. For further information, contact the Office of International Education and National Student Exchange, Taft Hall.

New England Land-Grant Student Exchange Program. Students with special academic interests can take advantage of the talent and resources available at the region's state universities without having to become a degree candidate at another institution. Under a cooperative agreement, URI students can study for one or two semesters at the other New England land-grant institutions if they wish to take a course, a sequence of courses, or part of a program not available at URI. Students participating in this program pay their normal URI tuition and fees and maintain their status as URI students. Advisors and members of the University College staff have more information about this program and its requirements.

Rhode Island Interinstitutional Exchange. Full-time students matriculated at one of the public institutions of higher education in Rhode Island may enroll for a maximum of seven credits of their full-time schedule per semester for study at one of the other public institutions at no additional expense. Each institution will determine and maintain the integrity of the degree to be awarded. Students will be subject to the course selection process applicable at the receiving institution. Summer Session and Continuing Education registrants are not covered under this program. Students interested in this arrangement should contact the Office of the Registrar.

Ocean Studies. Undergraduates are encouraged to explore opportunities at the Narragansett Bay Campus for active participation in the oceanographic sciences. Juniors and seniors may spend an entire semester at the Bay Campus pursuing their individual marine interests, for which they receive full academic credit. They work as part of a research team in the laboratory and in the field under the direct guidance of the Graduate School of Oceanography faculty.

Study Abroad. The Office of International Education and National Student Exchange sponsors University programs abroad, helps students make arrangements for foreign study, and maintains information about overseas study programs. The office also assists in the evaluation of credits from study abroad. The University sponsors exchange programs with universities in Austria, England, France, Indonesia, Japan,

Korea, Mexico, Spain, and Venezuela and is a member of several consortiums which enable URI students to participate in programs throughout the world. The University also participates in the New England—Quebec and New England—Nova Scotia exchange programs enabling our students to study at any of the 21 English- and French-speaking universities in these provinces on an exchange basis.

Many of these exchange programs make study abroad available to URI students at a modest cost. The study abroad director and advisor help students who wish to participate in these or other approved academic programs in choosing the appropriate programs, obtaining prior approval for courses to be taken abroad, and retaining matriculated status at the University of Rhode Island during their absence from campus. Most forms of financial aid are applicable to study abroad. For further information, contact the Office of International Education and National Student Exchange, Taft Hall.

University Year for Action (UYA). The UYA Internship Program is administered by the Office of Internships and Field Experience. It is an academic program that provides undergraduate students with opportunities for professional development and field study during the academic year as well as the summer. It is especially designed for the motivated student who wishes to apply classroom learning to a field experience in a career-related setting. Students from any undergraduate curriculum may apply for 15 credits in free or professional electives.

Students work full-time under the supervision of qualified professionals in carefully selected settings. A weekly seminar brings interns together to discuss issues that emerge during the internship. The program offers students a choice of more than 550 placements that include the categories of law, counseling, government, administration, public relations, communications, alternative education, health, nutrition, marketing, management, marine affairs, environmental science, and medical research.

To apply, students must have a minimum quality point average of 2.50 and junior or senior standing.

Army Reserve Officers Training Corps (ROTC)

Army Reserve Officers Training Corps (ROTC) is offered by the University and is available to all male and female students. Physically qualified American citizens who complete the entire four-year program are eligible to be commissioned in the U.S. Army. Delayed entry into active service for the purpose of graduate study is available. Military science is designed to complement other instruction offered at the University. Emphasis throughout is on the development of individual leadership abilities and preparation of the student for future important leadership roles in the Army, Professional military education skills in written communication, human behavior, military history, mathematical reasoning, and computer literacy are fulfilled through required University General Education courses and the military science curriculum. Three variations of ROTC are available.

During the four-year program, students participate in required military science courses and activities. Attendance at a sixweek advanced training camp is required between the third and fourth year.

The two-year ROTC program begins with a six-week Camp Challenge summer training session (with pay). After successful completion of Camp Challenge, the student enters the third year of ROTC and attends advanced camp during the next summer. As an alternative, an enlisted member of the Army National Guard or Army Reserve who has completed basic training can qualify for the two-year ROTC Simultaneous Membership Program.

The third variation consists of a threeyear program for students who wish to enter ROTC in their sophomore year or who intend to complete their academic studies in three years. This program compresses the Basic Course requirements into one year.

All Basic Course (freshman and sophomore) military science courses are an excellent medium for personal enrichment.

Significant scholarship opportunities are available.

Completion of the four-year military science program qualifies students to petition their college for a minor in military science.

Enrollment in any military science course allows a student to compete for off-campus training at the following U.S. Army schools: Airborne, Air Assault, Northern Warfare School, and Nurse Summer Training in Europe.

Grades

Grades and Points. Student grades are reported as A, A-, B+, B, B-, C+, C, C-, D+, D, and F. The unqualified letter grades represent the following standing: A, superior; B, good; C, fair; D, low grade, passing; F, failure; S, satisfactory; U, unsatisfactory.

Grades are given quality point values as follows: A, 4.00 points; A-, 3.70 points; B+, 3.30 points; B, 3.00 points; B-, 2.70 points; C+, 2.30 points; C, 2.00 points; C-, 1.70 points; D+, 1.30 points; D, 1.00 points; F and U, 0 points. P and S are not calculated in the quality point average.

Grade reports are mailed to all students at their home addresses at the end of each semester. Midsemester grade reports are mailed to all freshmen at their local addresses at the midpoint of each semester. These midterm reports are intended to alert freshmen to their academic status and to aid in advising. Midterm grades are not recorded on permanent academic records nor are they figured into quality point averages.

A grade may be reported as "incomplete" only when course work has been passing but not completed due to illness or another reason that in the opinion of the instructor justifies the report of incomplete. Incomplete grades not removed from an undergraduate student's record by the following midsemester will remain on the student's permanent record.

Students are required to make up failures in required courses. The course should be repeated when next offered. No limit is placed on the number of times a course may be repeated, but the credit requirement for graduation is increased by the number of credits repeated. Students are not required to make up failures in elective courses.

Certain courses do not lend themselves to precise grading, and for these courses only S (satisfactory) or U (unsatisfactory) will be given to all students enrolled. S/U courses are labeled as such in the University bulletins. S/U courses are not counted as courses taken under the Pass-Fail option.

Pass-Fail Grading Option. This plan encourages undergraduate matriculated students to increase their intellectual breadth and discover aptitudes in new areas of knowledge. A student above the freshman level who is not on probation may register under this plan for courses considered to be free, unattached electives by the college in which he or she is enrolled. Courses designated in the student's curriculum as degree requirements, General Education requirements, and military science courses may not be included.

A student choosing to take a course under this plan must notify his or her advisor, academic dean, and the Office of the Registrar, in writing, prior to the end of the add period of each semester. The instructor is not informed.

Grades will be P (pass) or F (fail). The P grade is credited toward degree requirements but not included in the quality point average. The F grade is calculated in the same manner as any other failure. A student may change from the P-F option to grade by notifying the Office of the Registrar in writing before the last date for dropping courses.

A student may elect not more than three P-F courses a semester and not more than two P-F courses during a summer.

Second Grade Option. Under specified conditions and with the approval of the academic dean, freshmen and transfer students in their first semester may repeat a course in which a grade of C- or lower was earned. Only the grade earned in the second attempt will be calculated in their quality point average. All grades earned for a given course will remain on the student's permanent academic record. A student

may not repeat a course in which a grade of "C" or better was earned without approval of the academic dean.

Dean's List

Undergraduate matriculated students who have achieved certain levels of academic excellence in any semester are honored at the end of that semester by inclusion of their names on the Dean's List. The Office of the Registrar will publish lists of students who have attained the required quality point average.

A full-time student may qualify for the Dean's List if he or she has completed 12 or more credits for letter grades and achieved a 3.30 quality point average.

A part-time student may qualify for the Dean's List if he or she has accumulated 12 or more credits for letter grades and achieved a 3.30 quality point average.

Probation and Dismissal

A student will be placed on scholastic probation if the student's overall cumulative quality point average falls below 2.00. For purposes of determining dismissal of part-time students, scholastic standing committees will consider an accumulation of 12 credits as the minimum standard for one semester's work.

A student will be dismissed for scholastic reasons when he or she has a deficiency of eight or more quality points below a 2.00 average after being on probation the previous semester. A student on probation for the second successive semester who has a deficiency of eight or fewer quality points below a 2.00 average will continue on probation. At the end of the third semester of probation, a student will be dismissed. Students who obtain less than a 1.00 average in their first semester will be dismissed automatically.

A student subject to dismissal will be so notified by the dean, after which he or she will have five days to file a written appeal with the dean.

Students are expected to be honest in all academic work. Instructors will have the explicit duty to take action in known cases

of cheating or plagiarism. For details, consult the *University Manual*, sections 8.27.10–8.27.20.

Leave of Absence

Occasionally, students are forced to take a semester or two off because of circumstances beyond their control. Others find they simply need a break from studying. For these students taking a leave of absence might be wise. Students who have an approved leave of absence for a semester or a year may register for the semester in which they plan to return without applying for readmission. Undergraduate students can apply for a leave of absence through the Office of the Registrar.

Withdrawal from the University

A student who wishes to withdraw from the University prior to the end of the semester or summer session shall do so according to procedures established by the Office of the Registrar. If the withdrawal process is completed satisfactorily and the student has cleared all financial obligations to the University, the date of withdrawal will be noted on the student's permanent academic record. No grades for the current semester will be recorded.

Students who withdraw from the University after the last day of classes but before a semester ends will be graded in all courses for which they are officially registered. If a student withdraws from the University after midsemester, grades will be recorded for any course that has an officially specified completion date prior to the date of withdrawal.

A student who withdraws from the University after midsemester and who seeks readmission for the next semester will be readmitted only with approval of the Scholastic Standing Committee for the college or school in which registration is desired.

Graduation Requirements

To graduate, a student must have completed the work for, and must have achieved the minimum quality point aver-

age established by, the curriculum in which he or she is enrolled and earned at least a 2.00 quality point average. In addition, students must abide by community standards as defined in the *University Manual* and the *Student Handbook*.

The work of the senior year has to be completed at the University of Rhode Island. Exceptions must be approved by the faculty of the college in which the student is enrolled.

Any student who has met the requirements for a second bachelor's degree and has completed an additional 30 hours of credit beyond the minimum requirements for the initial degree may be granted two bachelor's degrees.

Any student who has met the requirements for two separate majors within any single bachelor's curriculum has eamed a double major and may have both fields listed on his or her permanent record.

Students who complete at least 60 credits of their work at the University are eligible to graduate with distinction.

Grades in all courses attempted at the University will be included in the calculation of the quality point average. Those who attain a cumulative quality point average at the time of graduation of at least 3.30 are recognized as graduating "with distinction." Those who achieve a cumulative quality point average of at least 3.50 graduate "with high distinction," and those who attain a cumulative quality point average of at least 3.70 graduate "with highest distinction."

University Manual

University regulations governing matters such as conduct, grading, probation and dismissal, academic integrity, withdrawal from the University, and graduation requirements are fully explained in the *University Manual*. Copies of the *University Manual* are available for reference in the library and in the deans' offices.

Such rights and responsibilities are also described in the Student Handbook, which is available from the Office of Student Life.

UNDERGRADUATE PROGRAMS

he University attempts to provide the successful student with a range of knowledge and skills which can, with appropriate motivation and initiative, be used in a variety of ways after graduation.

Undergraduate programs offered at the University of Rhode Island are presented below, by college.

Study options vary from the traditional liberal education to programs that are heavily vocationally oriented. Successful completion of any course of study at the University, however, does not guarantee that the student will find either a specific kind or level of employment.

Students interested in the career opportunities related to particular programs of study are encouraged to consult University College advisors, the appropriate department chairperson, or Career Services. For students who are uncertain about their career choices, the Counseling Center also offers help.



UNIVERSITY COLLEGE

Diane W. Strommer, Dean
Sarah H. Rockett, Assistant Dean
Jayne Richmond, Assistant Dean
Christine Peterson, Academic Counselor
Winifred P. Kelley, Academic Counselor,
Athletes

Sandra Pearlman, Coordinator, Learning Assistance Center

University College offers incoming students a broad range of advising services and the opportunity to explore the variety of courses and programs available at the University before they commit themselves to a major in a degree-granting college. All first-year students are enrolled in University College except registered nurses. Through its strong program of academic advising by faculty, University College's purpose is to assist new students in making a smooth transition to the University and to provide special assistance, programs, and events for freshmen and sophomores.

Advisors, who have regular office hours at University College in Roosevelt Hall, are faculty members who represent each of the majors in the degree-granting colleges. Each student is assigned an academic advisor who is a specialist in the area in which the student intends to major or who has a particular interest in working with students who are undecided about their choice of

major. Advisors help students select and schedule the right courses, become familiar with University procedures and programs, and obtain whatever assistance they need.

If more students seek access to a program than can be accommodated due to limited facilities or faculty, those students who have shown the highest promise for academic success in the program will be admitted first. Where such limitations exist, the student must apply for acceptance in the program under conditions established by the specific department or college. This applies specifically to programs that have been declared "oversubscribed" by the

Vice President for Academic Affairs. Students who cannot be admitted to the program of their first choice can request entry into another program for which they have satisfied the entrance requirements, or they can spend one or two additional semesters in University College preparing to qualify for another program.

COLLEGE OF ARTS AND SCIENCES

Steffen H. Rogers, Dean Winifred E. Brownell, Associate Dean Wilfred Dvorak, Associate Dean Joyce P. Allen, Assistant Dean for Instruction Jonathan L. Blaney, Business Manager

The College of Arts and Sciences has two main objectives: first, to enable all students to understand our intellectual heritage, the physical and biological world in which we live, and our social, economic, and political development; and, second, to provide programs of professional education in selected fields as well as a strong foundation for graduate study.

The college has programs of study leading to the following degrees: Bachelor of Arts, Bachelor of Science, Bachelor of Fine Arts, and Bachelor of Music.

For information on prelaw, pre-physical therapy, premedical, predental, preveterinary, and teacher education programs, see pages 33–36.

Curriculum Requirements

In order to earn a degree in the College of Arts and Sciences, the student must meet requirements in three main areas:

1) the major, 2) Basic Liberal Studies, and 3) electives. A description of these areas follows.

1. The Major. Every student is required to specialize in a particular area or discipline; this area of specialization is called the major. The requirements for each major vary from field to field, and are described on pages 44–64. Any student who has met the requirements for two separate majors

within the Bachelor of Arts, the Bachelor of Science, or the Bachelor of Music degree programs in the College of Arts and Sciences has earned a double major and may have both fields listed on the transcript.

A student must maintain a 2.00 quality point average in his or her major to meet graduation requirements. One-half of the total number of credits needed in a given major must be earned at the University of Rhode Island.

Curricular Modifications. In consultation with the advisor, and with the approval of the department chairperson and the Dean, a student will be permitted to modify the normal requirements of the department in which the student is majoring. Students may modify any curricular requirement except course level, minimum quality point average, total credits, and the Basic Liberal Studies requirements. These may be modified only with approval of the Scholastic Standing and Petitions Committee of the College of Arts and Sciences. Petition forms are available in the Office of the Dean.

2. Basic Liberal Studies. In the College of Arts and Sciences, General Education requirements are called Basic Liberal Studies, and are required of all students. This series of courses is intended to ensure that students have educational experiences that will help them to become informed and responsible participants in society and contribute to the full development of their individual capabilities. The Basic Liberal Studies program embodies the philosophy and fundamental knowledge that characterizes an arts and sciences education.

The following courses are approved by the College of Arts and Sciences to fulfill Basic Liberal Studies requirements.

Fine Arts and Literature

Fine Arts: ARH 120, 251, 252, 284, 285, 359, 364, 374; ART 101, 103, 203, 207, 215, 231, 233; COM 231; HPR 101; LAR 201; MUS 101, 106, 111; THE 100, 181, 351, 352, 381, 382, 383.

Literature: AAF 247, 248; CLA 391, 395, 396, 397; CLS 160, 250, 335; ENG 160,

241, 242, 243, 247, 248, 251, 252, 260, 263, 264, 265, 280; FRN 327, 328, 391, 392, 393; GER 325, 326, 392; ITL 325, 326, 391, 392, 395; RUS 325, 326, 391, 392; SPA 305, 306, 307, 308, 325, 391, 392, 393.

Letters

AAF 150; APG 327; CLS 235; COM 200, 205, 210; HIS 111, 112, 113, 114, 115, 116, 118, 123, 125, 132, 141, 142, 145, 150, 171, 176, 177, 180, 304, 305, 306, 307, 309, 310, 311, 315, 321, 323, 324, 327, 332, 333, 340, 341, 342, 346, 353, 354, 360, 372, 376, 377, 381, 382, 384, 398; HPR 104, 107, 203; JOR 110; LAR 202; LET 151, 351; NES 200; PHL 103, 204, 210, 212, 217, 235, 314, 318, 319, 321, 322, 323, 324, 325, 328, 331, 346, 355; PSC 240, 341, 342; PSY 310; RLS 111, 125, 126, 131; WMS 333.

Natural Sciences

APG 201; AST 108; AVS 101; BIO 101, 102; BOT 111; CHM 100, 101, 102, 103, 105, 112, 114, 124, 191, 192; FSN 207; GEL 100, 102, 103; HPR 103, 109; OCG 123; PHY 109, 110, 111, 112, 130, 140, 185, 186, 213, 214, 285, 286; ZOO 111, 286.

Social Sciences

APG 200, 202, 203, 220, 319; COM 220; CNS 220; ECN 100, 201, 202, 381; EDC 102, 312; ENG 232, 330; FSN 150; GEG 100, 104; HPR 102, 110; HDF 220; LIN 200, 202, 220; NRS 100; NUR 150; PSC 113, 116, 201, 221, 288; PSY 103, 113, 232, 235, 254; REN 105; SOC 100, 102, 204, 206, 212, 214, 216, 224, 238, 240, 241, 242, 316, 330, 336; WMS 150.

Mathematics

BAC 101, 102; CSC 201; HPR 108; MTH 107, 108, 111, 131, 132, 141, 142; STA 220.

English Communication

Writing (Cw)—CMS 101; ELS 112, 122; ENG 103; HPR 112; WRT 101, 103, 123, 201, 227, 301, 333. General (C)—CMS 101; COM 101 and 103; HPR 111; PHL 101.

Basic Liberal Studies Requirements

Courses used to fulfill these requirements must be selected from the list approved by the College of Arts and Sciences. Basic Liberal Studies requirements are designed only for students in the College of Arts and Sciences, but they also fulfill the University's General Education requirements.

Students may use only two courses per discipline (as identified by the course code) to fulfill requirements in Fine Arts and Literature, Letters, Natural Sciences, and Social Sciences.

Courses in a student's major may not be used to fulfill requirements in Fine Arts and Literature, Letters, Natural Sciences, and Social Sciences. Students completing a double major, however, may use courses from one major to fulfill these requirements.

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Basic Liberal Studies Requirements	BACHELOR OF ARTS	BACHELOR OF SCIENCE BACHELOR OF FINE ARTS BACHELOR OF MUSIC
Fine Arts and Literature	9 credits (at least 3 in Fine Arts; at least 3 in Literature)	6 credits (3 in Fine Arts; 3 in Literature)
Letters	9 credits	6 credits
Natural Sciences	9 credits	6 credits
Social Sciences	9 credits	6 credits
Mathematics	3 credits	3 credits
English Communication	6 credits (3 must be in a writing course; the other 3 may be in another writing course or may be selected from the general communication courses)	6 credits (3 must be in a writing course; the other 3 may be in another writing course or may be selected from the general communication courses)
Foreign Language and Culture	Choose one of the following options: • Course work through the intermediate level (104 for modern	Choose one of the following options: • Two-course sequence in a language studied for two or more years in high school through at least

- Course work through the intermediate level (104 for modern languages; 302 for classical languages)
- Demonstration of competence through the intermediate level by examination
- Study abroad in an approved academic program for one semester
- Two-course sequence in a language studied for two or more years in high school through at least the 103 level in a modern language or 301 in a classical language
- Demonstration of competence through the intermediate level by examination or by successful completion of 104 in a modern language or 302 in a classical language
- Course work in a language not previously studied (or studied for less than two years in high school) through the beginning level (102)
- Study abroad in an approved academic program
- Two courses selected from within a single culture cluster taken, if possible, in the same or consecutive semesters. See pages 29–30 for a list of approved culture clusters.

Foreign Language and Culture
See chart on opposite page.

3. Electives. Electives are courses not included in the Basic Liberal Studies or major requirements which students may freely select to earn the total number of credits required for graduation. Many students use their elective credits to develop a minor field (see page 30).

Course Load. No student may take more than 19 credits per semester without permission from the Dean.

Repeating Courses for Credit. Unless otherwise stated in the course description, a course cannot be repeated for credit.

Credit can be counted only once toward the total credits required for graduation.

Graduation. It is the responsibility of the student to be familiar with University and college requirements and to file for graduation with the Office of the Dean. Deadlines for submission are as follows:

May Graduation—November 1
August Graduation—April 1
December Graduation—August 1

Seniors completing their final course work off campus must file a Senior Off-Campus Study Form with the Office of the Dean and they should file for graduation before leaving campus.

Bachelor of Arts

The Bachelor of Arts curriculums provide a general cultural background and an opportunity to major in any one of 31 fields of study.

Curriculum Requirements. Each candidate for a Bachelor of Arts degree must meet certain minimum curricular requirements in quantity and quality. These requirements include: at least 120 passed credits, with at least 42 credits in courses numbered 300 or above, and an overall quality point average of at least 2.00.

In addition to meeting the requirements of the Basic Liberal Studies program, each candidate must complete a major and a number of elective courses. The major totals 27–33 credits.

B.A. Major. The major is the discipline or subject area in which the degree is granted. It may include not only required courses within the major department but also courses in related subjects. The student should declare this major before the end of the fourth semester.

The major comprises no fewer than 27 nor more than 33 credits. These, however, are exclusive of any credits that are outside the major department but may be required by that department as prerequisites. Including such prerequisites, the major may not exceed 36 credits.

The student may earn up to 45 credits in course work offered by the major department as identified by the course code, counting as electives those credits earned in excess of the major requirements. Any credits in excess of 45 earned in the major department increase correspondingly the minimum number of credits required for graduation.

At least half of the credits in the major must be earned at the University of Rhode Island.

Majors include: anthropology, art (history and studio), biology, chemistry, classical studies, communication studies, comparative literature studies, economics, English, French, geology, German, history, Italian, journalism, Latin American studies, linguistics, marine affairs, mathematics, music, philosophy, physics, political science, psychology, Russian, sociology, Spanish, theatre, urban affairs (urban social processes, policy formation, and spatial development), and women's studies.

Bachelor of Science

The Bachelor of Science curriculums are professionally oriented and, in general, meet the accreditation standards of national professional associations.

Curriculum Requirements. All candidates for the Bachelor of Science degree must fulfill the requirements of the Basic Liberal Studies program and complete a major of 30–45¹ credits within a department or program. In addition, a department may require for its major certain courses in other departments, with the stipulation that this will not preclude their application to the Basic Liberal Studies program requirements. Students must earn an overall quality point average of at least 2.00. No more than 130 credits can be required in a program.

At least half the credits in the major must be earned at the University of Rhode Island.

Each major within the B.S. curriculum has certain more specific requirements, as listed on the following pages.

Majors include: applied quantitative economics, applied sociology, botany, chemistry, chemistry and chemical oceanography, clinical laboratory science, computer science, geology, geology and geological oceanography, mathematics, microbiology, physics, physics and physical oceanography, statistical science, and zoology.

Bachelor of Fine Arts

The Bachelor of Fine Arts curriculums provide the opportunity to discover and develop creative capacities in the fine arts. The emphasis is on richness of program and quality of experience rather than the development of isolated skills. Applicants registering for work toward the Bachelor of Fine Arts degree must receive permission of their major department by arranging for an interview with a departmental representative. Further details and appointments may be obtained through the Undergraduate Admissions Office.

Curriculum Requirements. All candidates for the Bachelor of Fine Arts degree are required to meet the requirements of the Basic Liberal Studies program and to earn an overall quality point average of at least 2.00.

¹The student majoring in chemistry, for ACS accreditation purposes, will be allowed 48 credits.

At least half the credits in the major must be earned at the University of Rhode Island.

Majors include: art and theatre.

Bachelor of Music

The Bachelor of Music curriculum is designed to prepare qualified students for careers in the field of music. Students may select one of the seven majors depending on their aims and abilities. Admission requirements for teacher education programs are described on pages 33–34.

Curriculum Requirements. All candidates for the Bachelor of Music degree are required to meet the requirements of the Basic Liberal Studies program and to earn an overall quality point average of at least 2.00.

At least half the credits in the major must be earned at the University of Rhode Island.

Students are encouraged to attend department-sponsored events each semester.

Majors include: classical guitar, voice, piano or organ, orchestral instrument, music history and literature, theory and composition, and music education.

All areas provide for a good background in academic subjects, and each curriculum contains basic courses for the development of sound musicianship. An audition conducted by members of the Music Department staff is required for permission to register for work toward the Bachelor of Music degree.

The music education curriculum includes courses in educational psychology, methods, and a teaching internship that leads to state certification for teachers.

The total number of credits for graduation is 125 (126 for music education majors).

African and Afro-American Studies Program

Director: Associate Professor Hamilton

The African and Afro-American studies program is an interdisciplinary program that offers a minor to undergraduate students. Its objective is to broaden students' intellectual and global experiences through the study of Africa and African diaspora. See page 31 for a description of the requirements for this minor.

Anthropology

The Department of Sociology and Anthropology offers the degree of Bachelor of Arts (B.A.) in anthropology.

Faculty: Professor Poggie, chairperson.
Professors Loy, Pollnac, and Turnbaugh;
Associate Professor LaVelle; Assistant Professor Lynch; Research Associate Professor Handsman; Research Assistant Professor Johnston.

Students desiring to major in anthropology must complete a total of 30 credits (maximum 45 credits) in that subject. This total must include at least one course (three credits) from each of the five subdisciplines of anthropology, as follows: *Cultural Anthropology* includes APG 203, 309, 322, 326, 405, and 413; *Culture Areas* includes APG 311, 313, 315, 319, and 325; *Physical Anthropology* includes APG 201, 300, 327, 350, 390, 400, and 412; *Archaeology* includes APG 202, 303, 310L, and 317; *Anthropological Linguistics* includes APG 200 and 220.

In addition, each student majoring in anthropology must complete APG 401 and one of the following methodology courses: APG 300 if taken with the laboratory (APG 310]), 302, 317, 350, or 412. The remaining nine credits can be selected from course offerings in anthropology.

It is recommended that the first course in each subdiscipline be at the 200 level. These 200-level courses are prerequisites for upper-division courses in the subdisciplines, although prerequisites may be waived by the instructor.

It is strongly recommended that anthropology majors take at least one course in inferential statistics (e.g., STA 308 or 409).

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Art

The Department of Art offers a Bachelor of Arts (B.A.) degree with a major in either art history or art studio, and a Bachelor of Fine Arts (B.F.A.) degree in studio.

Faculty: Professor Holmes, chairperson.
Professors Calabro, Klenk, Onorato, Parker, Richman, Rohm, and Roworth; Associate
Professor Pagh; Assistant Professor
Hollinshead.

BACHELOR OF ARTS

Art History. It is recommended that students intending to major in art history plan to complete a minimum of six credits in the history of art by the end of the sophomore year. For graduation, students must complete 30 credits (maximum 45 credits) in art history, including ARH 251 and 252 (6). At least 12 credits must be taken from ARH 354, 356, 359, 363, 365. An additional six credits must be taken from the preceding group or one or more of the following: ARH 284, 285, 364, 374, 375. An additional six credits must be taken at the 400 level. At least three of these credits must be taken from ARH 461, 462, 480. It is recommended that students who expect to pursue graduate studies in art history take ARH 469 or 470.

It is recommended that students majoring in art history achieve intermediate-level proficiency in at least one foreign language. Students anticipating graduate study in art history may need proficiency in a second foreign language. Students are also encouraged to enroll in courses in art studio, history, literature, music, and philosophy.

A total of 120 credits is required for graduation. Students must fulfill the requirements of the Basic Liberal Studies program and take 30–45 credits in art history. Students may use courses in art studio to satisfy Basic Liberal Studies requirements. Of the 120 credits required for graduation, 42 credits must be in courses numbered 300 or above.

Art Studio. It is recommended that students intending to major in art studio plan

to complete foundation courses in the freshman year (ART 101, 103, 207 and ARH 120, section 02). For graduation, a minimum of 33 credits in art (maximum 45 credits) must be completed, including: the studio courses ART 101, 103, and 207; the art history courses ARH 120, 251, 252; and one art history elective at the 200 level or above.

During the first semester of the sophomore year, all B.A. studio majors and B.F.A. candidates must participate in ART 002 Sophomore Review. To participate, students must have a 2.30 grade point average in the foundation courses (ART 101, 103, 207 and ARH 120) and submit a one-page statement of purpose.

An additional six credits must be selected from one of the following sequences of studio courses: ART 213, 314; 215, 316; 221, 322; 231, 332; 233, 334; 243, 344. This sequence must be completed by the end of the junior year.

In the senior year, an additional six credits must be selected from 300- or 400-level studio courses (except 309 and 310).

It is recommended that art majors elect at least three credits in the allied fields of music or theatre.

A total of 120 credits is required for graduation. Students must fulfill the requirements of the Basic Liberal Studies program and take 21–36 credits in art studio and nine credits in art history. Students may use additional approved BLS courses in art history to satisfy Basic Liberal Studies requirements. Of the 120 credits required for graduation, 42 credits must be in courses numbered 300 or above.

BACHELOR OF FINE ARTS

It is recommended that students intending to enter the B.F.A. program in art plan to complete ARH 120 in the freshman year and to have completed an additional three credits in art history and a minimum of 24 credits in studio by the end of the sophomore year.

Students in the B.F.A. program must complete a minimum of 72 credits in art. Studio courses required of all majors in-

clude: ART 101 (3), 103 (3), 207 (3), 208 (3), either 213 or 215 (3), 405 (3), and 406 (3).

An additional 12 credits must be selected from 200-level studio courses, and an additional 21 credits must be selected from 300-level studio courses.

During the first semester of the sophomore year, all B.A. studio majors and B.F.A. candidates must participate in ART 002 Sophomore Review. To participate, students must have a 2.30 grade point average in the foundation courses (ART 101, 103, 207 and ARH 120) and submit a one-page statement of purpose.

ARH 120 is required of all students, and an additional nine credits must be selected in art history, three credits of which must be numbered 300 or above.

An additional six credits of art electives must be selected at the 300 level or above in either studio or art history.

A minimum of 120 credits is required for graduation, including the following: major requirements in studio (54), art history (12), and studio and/or art history electives (6). Students must meet the requirements of the Basic Liberal Studies program.

Biological Sciences

Programs in biological sciences are administered by the Department of Biochemistry, Microbiology, and Molecular Genetics and the Department of Biological Sciences. A student may earn either the Bachelor of Arts (B.A.) degree in biology or the Bachelor of Science (B.S.) degree in botany, microbiology, or zoology. These departments also offer the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

Biochemistry, Microbiology, and Molecular Genetics Faculty: Professor Laux, chairperson. Professors P. Cohen, Goldsmith, Hartman, Hufnagel, D. Nelson, Traxler, and Tremblay; Associate Professors Bradley, Chandlee, Krul, Mottinger, and Sperry; Assistant Professors Fischl and J.H. Norris; Professors Emeriti Cabelli, Carpenter, and N. Wood. Biological Sciences Faculty: Professor Bullock, chairperson, Botany: Professors Hargraves, Harlin, Killingbeck, Koske, Smayda, and E. Swift; Associate Professor Mottinger; Assistant Professors I.H. Norris and A. Roberts: Adjunct Professors Chomet and Kausch; Adjunct Associate Professors Hammen-Winn and Thursby: Adjunct Assistant Professors Gemma and E. Roberts; Professors Emeriti L. Albert, Beckman, Caroselli, Goos, Hauke, Lepper, and Palmatier. Zoology: Professors Bibb, Cobb, Costantino, Goldsmith, Heppner, Hill, Hyland, Kass, Shoop, Specker, and Winn; Associate Professors Mottinger and Twombly; Associate Research Professor Bengtson; Adjunct Professors D. Miller and Turner: Adjunct Associate Professors Ho and Sharma: Professors Emeriti Goertemiller, Hammen, Harrison, and Zinn; Associate Professors Emeriti Krueger and Mathewson.

BACHELOR OF ARTS

Students selecting a major in biology must complete a minimum of 28 credits (maximum 45 credits) in biological sciences including the following basic courses: BIO 101 and 102 or BOT 111 and ZOO 111 (6–8), MIC 211 (4), and an additional six credits of BOT electives and six credits of ZOO electives.

The remaining four to six credits can be selected from courses in botany, microbiology, or zoology. Students in this major must elect a year of chemistry. Those wishing to prepare for a professional career in the life sciences should enroll in a B.S. program described below.

A total of 120 credits is required in the B.A. program. At least 42 credits must be in courses numbered 300 or above.

BACHELOR OF SCIENCE

This curriculum provides specialization in the fundamental principles of botany, microbiology, or zoology, and is concerned with the application of biological science to problems of modern life. It also provides preparation for graduate work in biological fields including aquatic, environmental, and marine biology, molecular,

cellular, and developmental biology, biological oceanography, genetics, immunology, limnology, and physiology, and preparation for admission to professional schools of medicine, dentistry, and veterinary medicine.

Students who know their professional goals are encouraged to declare a major as soon as possible to take advantage of skilled advising in botany, microbiology, or zoology. Students *must* declare their major when leaving University College.

Freshman Year
First semester: 17–18 credits

Introductory biology requirement (see Botany, Microbiology, Zoology), CHM 101, 102 or 103, 105 (4), math requirement (3–4) (see Botany, Microbiology, Zoology), modern language or elective (3), and Basic Liberal Studies requirement or free elective (3).

Second semester: 17-18 credits

Introductory biology requirement (see Botany, Microbiology, Zoology), CHM 112, 114 (4), math requirement (3–4) (see Botany, Microbiology, Zoology), modern language or elective (3), and Basic Liberal Studies requirement or free elective (3).

Sophomore Year First semester: 16 credits

MIC 211 (4),² CHM 227 (3),³ and nine credits of Basic Liberal Studies requirements or free electives⁴ for a total of 16 credits.

Second semester: 17-18 credits

Curriculum requirement (3–4), Basic Liberal Studies requirements or free electives (9), and the remaining chemistry requirements CHM 226,⁵ 228 (5).³

Botany. A minimum of 30 credits in botany is required and must include BOT 111, 262, 321, 352, and 445. The remaining 14 credits will be selected to complete a particular subdisciplinary path. In addition, the student must take MIC 211; CHM 101, 102 or 103, 105, 112, 114, 226,5 227, 228 or 124, 126 and BCH 311; PHY 213, 285, 214, 286 or 111 and 112, 185

and 186; ZOO 111; WRT 101; COM 101; MTH 131; CSC 201 or MTH 132. A modern language is recommended.

Students are strongly urged to consult faculty advisors to obtain guidance on the various subdisciplinary paths available.

A total of 130 credits is required for graduation.

Microbiology. A minimum of 30 credits in microbiology is required, including MIC 333, 413, 414, 415, 416, and 495 or 496, and one course selected from MIC 412, 422, 432, or 576. The student majoring in microbiology may include any course in microbiology; BOT 432, 465, 534, 542; PCG 536; ZOO 327, 331, 341, 437, and 512. A student who plans to attend graduate school is advised to take MTH 131 and 132 or 141 and 142, and BCH 435. In addition, the student must take BOT 111 and 352; ZOO 111; CHM 101, 102, or 103, 105, 112, 114, 212, 226,5 227, and 228; BCH 311; PHY 213, 214, 285, and 286 or 111, 112, 185, and 186; and MTH 131 or 141 and one semester from the following: MTH 111, 132, 142; CSC 201 or STA 407.

A total of 130 credits is required for graduation.

Zoology. A minimum of 30 credits in zoology is required and must include ZOO 101, 102, 104, 201, 202, and 203. A maximum of six credits in ZOO 391, 392, 491, and 492 may be used toward the required 30 credits. In addition, the student must take BOT 111; CHM 101, 102, 112, 114, 226,5 227, 228 or 124, 126 and BCH 311; MTH 131, 132 or 141, 142; PHY 111, 112, 185, and 186 or PHY 213, 214, 285, 286; and a modern language through the intermediate level. Study abroad does not satisfy the departmental language requirement. ZOO 111 is not required for a major in zoology but may be applied toward the 30 credits required. Students are encouraged to become involved in the department's varied research activities by arranging to register for assigned work or guided research.

Students are strongly urged to consult the zoology advisors and obtain from them detailed programs of the various subdisciplinary paths through the department most suited to their particular career goals.

A total of 130 credits is required for graduation.

Chemistry

The Department of Chemistry offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in chemistry are also offered.

Faculty: Professor W. Nelson, chairperson.
Professors C. Brown, P. Brown, Dain, Euler,
Fasching, Fisher, Freeman, Kirschenbaum,
W. Rosen, Traficante, Vittimberga, and S.
Yang; Associate Professors K. Peterson and
Zoski; Professor Emeritus Cheer.

BACHELOR OF ARTS

Students selecting this program must complete a minimum of 29 credits (maximum 45 credits) in chemistry by taking either 10 credits as CHM 191, 192; or 12 credits as CHM 101, 102, 112, 114, and 212; and 16 credits as CHM 291, 292, 335, 431, and 432. One additional course must be chosen from CHM 401, 412, or 427. CHM 226, 227, 228 may be substituted for the 291, 292 sequence.

MTH 141 and 142 and one year of physics (PHY 213, 214, 285, and 286, or PHY 111, 112, 185, and 186)⁶ are required.

A total of 120 credits is required for the B.A. degree. At least 42 of these must be in courses numbered 300 or above.

BACHELOR OF SCIENCE

Designed to prepare the student for a career in chemistry, this curriculum provides a thorough training in both theory and practice in the fields of analytical, physical, organic, and inorganic chemistry. Those who complete this curriculum are prepared to practice as a chemist, pursue graduate studies in chemistry, or enroll in a professional school in a related area such as medicine, dentistry, or pharmacy.

Preprofessional studies can be focused through the use of electives.

The curriculum has been approved by the American Chemical Society Committee on the Professional Training of Chemists. Graduates receive a certification card issued by the society and are eligible for senior membership after two years of experience in the field of chemistry. It is strongly recommended that WRT 101 or 201 be taken in the freshman year. CHM 425, 427 should be taken in the junior year by students planning research or advanced course work in organic chemistry.

Bachelor of Science students desiring the American Chemical Society option in chemistry/biochemistry must take BCH 481, 482 or BCH 581, 582. Six additional credits in undergraduate research (either CHM 353 and/or 354) are also required to satisfy requirements for advanced laboratory. CHM 353, 354 will be supervised by faculty with expertise in biochemistry. Students electing the chemistry/biochemistry option may wish to take additional courses in molecular biology as electives.

A total of 130 credits is required for the B.S. degree.

Freshman Year
First semester: 17 credits

CHM 191 (5),⁷ MTH 141 (4), language⁸ or free elective (3), Basic Liberal Studies requirements (5).

Second semester: 17 credits

CHM 192 (5),⁷ MTH 142 (4), language⁸ or free elective (3), Basic Liberal Studies requirements (5).

Sophomore Year
First semester: 17 credits

CHM 291 (4), MTH 243 (3), PHY 213 (3) and 285 (1),⁶ language⁸ or Basic Liberal Studies requirements (6).

Second semester: 17 credits

CHM 292 (4), MTH 244 (3), PHY 214 (3) and 286 (1), language or Basic Liberal Studies requirements (6).

Iunior Year9

First semester: 14 credits

CHM 431 (3), 335 (2), physics elective (3), Basic Liberal Studies requirement (3), free elective (3).

Second semester: 17 credits

CHM 432 (3), 412 (3), 414 (2), Basic Liberal Studies requirements (6), free elective (3).

Senior Year

First semester: 16 credits

CHM 401 (3), 425 (2), 427 (3), curriculum¹⁰ requirements (3–5), free electives (3–5).

Second semester: 15 credits

CHM 492 (1), 402 (2), curriculum¹⁰ requirement (0–3), free electives (8–11).

Chemistry and Chemical Oceanography

The Department of Chemistry and the Graduate School of Oceanography offer a Bachelor of Science (B.S.) degree in chemistry and chemical oceanography.

Coordinator: Professor Fasching (Chemistry).

The faculty consists of the members of the Department of Chemistry and the chemical oceanography faculty of the Graduate School of Oceanography.

The program is designed to prepare the student for a career either in chemistry or in chemical oceanography. This curriculum provides a thorough training in both theory and practice in the fields of analytical, physical, organic, inorganic, and oceanographic chemistry. Those who complete this curriculum are prepared to continue with graduate study leading to an advanced degree in chemistry or in chemical oceanography, to teach, or to enter specialized fields in development, control, technical sales, and research in the chemical or oceanographic industries.

The curriculum has been approved by the American Chemical Society Committee on the Professional Training of Chemists. Graduates receive a certification card issued by the society and are eligible for senior membership after two years of experience in the field of chemistry. It is strongly recommended that WRT 101 or WRT 201 be taken in the freshman year.

A total of 130 credits is required for graduation.

Freshman Year

First semester: 17 credits

CHM 191 (5),⁷ MTH 141 (4), language⁸ or free elective (3), Basic Liberal Studies requirements (5).

Second semester: 17 credits

CHM 192 (5),⁷ MTH 142 (4), language⁸ or free elective (3), Basic Liberal Studies requirements (5).

Sophomore Year First semester: 17 credits

CHM 291 (4), MTH 243 (3), PHY 213 (3) and 285 (1), 6 language⁸ or Basic Liberal Studies requirements (6).

Second semester: 17 credits

CHM 292 (4), MTH 244 (3), PHY 214 (3) and 286 (1),6 language8 or Basic Liberal Studies requirements (6).

² Not required for zoology majors.

³ Botany and zoology majors may take CHM 124, 126 and BCH 311 instead of CHM 226, 227, and 228. Consult an advisor.

Botany and zoology majors are strongly advised to begin taking required major courses at this time.

⁵ CHM 229, 230, which is offered in summer only, may be substituted for CHM 226.

⁶ PHY 203, 204, 205, 273, 274, and 275 may be substituted for PHY 213, 214, 285, and 286, but will not satisfy Basic Liberal Studies requirements.

⁷ Students can take CHM 101, 102, 112, 114, and 212 instead of 191, 192.

⁸ Students planning to attend graduate school should take Russian or German through the intermediate level.

⁹ See previous comments concerning CHM 425, 427.

¹⁰ CHM 353, 354 or, with permission of department, any 500-level chemistry course. Credit may be given for an off-campus research project with supervision by a faculty member of the Department of Chemistry.

Junior Year

First semester: 14 credits

CHM 431 (3), 335 (2), OCG 401 (3), Basic Liberal Studies requirement (3), free elective (3).

Second semester: 15 credits

CHM 432 (3), OCG 494 (3), Basic Liberal Studies requirements (6), free elective (3).

Senior Year

First semester: 16 credits

CHM 401 (3), 425 (2), 427 (3), OCG 493

(3), free electives (5).

Second semester: 17 credits

CHM 412 (3), 414 (2), OCG 521 (3), free

electives (9).

Classical Studies

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a concentration in classical studies.

Faculty: Associate Professor Suter, section head.

Students selecting classical studies as a major complete a minimum of 30 credits: a) 18 credits from either LAT 301, 302, 497, 498 or GRK 301, 302, 497, 498; b) six credits from the other language at any level; c) six additional credits from the following: ARH 354; CLA 391, 395, 396, 397; HIS 300, 303; PHL 321. Either the LAT 101, 102 or the GRK 101, 102 sequence may count toward the major; the other 100-level sequence, not counting toward the major, will serve as a prerequisite for advanced courses.

Certification in secondary education in Latin is available through the Department of Education.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Clinical Laboratory Science

The clinical laboratory science curriculum is administered by the Department of Biochemistry, Microbiology, and Molecular Genetics and offers a Bachelor of Science (B.S.) degree in clinical laboratory science. The Master of Science (M.S.) degree in clinical laboratory science is also offered.

Faculty: Professor Laux, chairperson; Paquette, coordinator. Adjunct Clinical Professors Allegra and Kenney; Adjunct Clinical Associate Professors Kessiman and Schwartz; Adjunct Clinical Assistant Professors Campbell, Gmuer, Heelan, Howard, Lewandowski, and Mello.

Clinical laboratory science is the health profession concerned with the diagnosis, treatment, and prevention of disease using biological, chemical, and physical methods in the clinical laboratory. During the first three years, the emphasis is on Basic Liberal Studies requirements and on the basic courses in biology, chemistry, mathematics, and physics needed for background in the applied sciences. The courses of the senior year are taught off campus by the staff members of affiliated hospital schools of medical technology. These schools are accredited by the National Accreditation Agency in Clinical Laboratory Science. The senior year is a 12-month program of study and starts in late July, soon after the completion of the third year of the curriculum. It is taken at one of the following hospitals, which are about 30 miles from the main campus of the University: Rhode Island Hospital and St. Joseph Hospital in Providence; the Memorial Hospital of Rhode Island in Pawtucket; or the Rhode Island Medical Center in Cranston. The clinical program includes lecture and laboratory instruction in the various areas of clinical laboratory science—clinical chemistry, clinical microbiology, hematology, immunology, and immunohematology-and prepares the student for the national certification examinations.

Applicants to this curriculum should have completed 60 credits by June of the sophomore year and should have taken most of the courses listed below during the first two years. Students are selected by the University Committee on Clinical Laboratory Science and by program officials of the hospital schools. Since the number of

students admitted to this professional curriculum is limited, interested students should consult early in their college career with the coordinator so that they will be familiar with the requirements and application procedures. Flexibility in the curriculum permits the student who is not accepted to fulfill requirements for the Bachelor of Science degree in another concentration such as microbiology, zoology, or certain related health sciences.

Students with a degree in health or a science discipline may also apply to the clinical internship as a fifth year of study.

A total of 130 credits is required for graduation.

Freshman Year

First semester: 15-16 credits

CHM 101, 102 or 103, 105 (5); BOT 111 or ZOO 111 (4); MTC 102 (1); MTH 111 or 131 (3) or 141 (4); and one Basic Liberal Studies requirement (3).

Second semester: 14 credits

CHM 112, 114 (4), ZOO 111 or BOT 111 (4), CSC 101 or 201 (3), and one Basic Liberal Studies requirement (3).

Sophomore Year

First semester: 17 credits

CHM 227 (3), PHY 111, 185 (4), MIC 211 (4), and Basic Liberal Studies requirements (6).

Second semester: 17 credits

CHM 226, 228 (5), MTC 202 (3), ZOO 242 (3), and Basic Liberal Studies requirements (6).

Iunior Year

First semester: 18 credits

MIC 333 (3), MTC 483 (3), EDC 102 or 312 (3), and Basic Liberal Studies requirements (9).

Second semester: 17 credits

MIC 432 (3), BCH 311 (3), STA 308 or 407 (3), MGT 300 or 301 (3), and electives (5).

Senior Year

First semester: 16 credits

MTC 401 (8), 403 (4), 405 (2), and 407 (2).

Second semester: 16 credits MTC 402 (8), 404 (6), and 406 (2).

Communication Studies

The Department of Communication Studies offers the Bachelor of Arts (B.A.) degree in communication studies.

Faculty: Professor S. Wood, chairperson.
Professors Anderson, Bailey, Brownell,
Devlin, Doody, and Schultz; Associate Professors G. Chen, Ketrow, and Mundorf;
Assistant Professor Quainoo.

The program in communication studies provides maximum flexibility in planning for a variety of academic and occupational goals. The curriculum is personalized for each student. Although the student will play an important role in curriculum planning, his or her program is closely supervised by the advisor. Specific curricular, extracurricular, and internship programs are planned as integral parts of each student's program. Departmentally approved courses provide the student diversity or a more focused approach, depending on the student's needs and goals. Courses outside the department that relate to the student's needs and goals are also encouraged.

Courses in communication studies also can count as an option area in the B.S. degree program in the College of Human Science and Services. Other courses can count toward a minor in public relations when taken in conjunction with specific journalism and marketing courses.

Students selecting this major may pursue studies in business and professional communication, communication theory, oral interpretation, rhetoric and public address, or public relations.

The program requires a minimum of 36 credits (maximum 45 credits) in the major, including COM 101, 103, 206, and 306. The remaining 24 credits will be distributed as follows: at least two courses at the 200 level (excluding 216); three courses at the 300 level; and three courses at the 400 level (excluding COM 471, 472 and 491, 492). The student and an advisor will design an appropriate selection of courses.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Comparative Literature Studies

The Department of English and the Department of Modern and Classical Languages and Literatures offer jointly the Bachelor of Arts (B.A.) degree in comparative literature. The Master of Arts (M.A.) degree is also offered.

Coordinator: Professor Manteiga (Modern and Classical Languages and Literatures).

The choice of courses in a student's major and in the area of special interest must have both sufficient range (genre, period, and at least two literatures) and a specific focus. It must be approved by an advisor and filed with the Office of the Dean.

Students in the comparative literature studies program fulfill the Basic Liberal Studies Fine Arts and Literature requirement by taking six credits in Fine Arts and three credits in Literature which are over and above their major literature requirements.

Students must complete a minimum of 30 credits in one of the following major options.

English and One Foreign Literature in the Original Language. Nine credits in English and/or American literature, 300 level or above; nine credits in one foreign literature; three credits in literary theory or criticism (CLS 350). The remaining credits are to be taken from the comparative literature core courses or the literature courses in the Department of English or the Department of Modern and Classical Languages and Literatures.

Two Foreign Literatures in the Original Language. Nine credits in each of two foreign literatures; three credits in literary theory or criticism (CLS 350). The remaining courses are to be taken from the comparative literature core courses or the literature courses in the Department of English or the Department of Modern and Classical Languages and Literatures.

World Literature in English Translation. Three credits in the nature of language from APG/LIN 200; APG/LIN 220; three credits in literary theory or criticism (CLS 350). The remaining credits are to be taken from the comparative literature core courses and the literature courses in the Department of English, and the literature in English translation courses offered by the Department of English and the Department of Modern and Classical Languages and Literatures. In addition, the student must have proficiency in a foreign language through the intermediate level.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Computer Science

The Department of Computer Science and Statistics offers the Bachelor of Science (B.S.) degree in computer science. The department also co-sponsors the B.S. in computer engineering (described in the College of Engineering section). In addition, the department offers the Master of Science (M.S.) degree in computer science and the Doctor of Philosophy (Ph.D.) in applied mathematical sciences with a specialization in computer science.

Faculty: Professor Lamagna, chairperson.
Associate Professors Baudet, Carrano, J.
Kowalski, and Ravikumar; Assistant Professors Peckham and Wolfe; Adjunct Associate
Professor Strauss; Adjunct Assistant Professors Ravenscroft and Rubin; Professor Emeritus Carney.

The curriculum is designed to provide a broad introduction to the fundamentals of computer science including software and systems, programming languages, machine architecture, and theoretical foundations of computing. The required mathematics preparation provides a basis for advanced work. Students will be well prepared for graduate study in computer science or computer-related areas.

Students in the computer science curriculum must complete a minimum of 41 credits as follows: CSC 211 (4), 212 (4),

301 (3), 311 (3), 331 (3), 340 (3), 411 (3), 412 (3); 15 additional credits chosen from CSC 312 (3), 320 (3), 402 (3), 406 (3), 420 (3), 436 (3), 440 (3), 445 (3), 450 (3), 481 (3), ELE 405 (3), including at least three credits from among CSC 440, 445, 450.

Students will also complete one COM course (3); MTH 141 (4), 142 (4), 215 (3), 243 (3); PHY 213, 285 (4), 214, 286 (4), or PHY 203, 273 (4), 204, 274 (4); one WRT course (3); and one course from among the following: MTH 316 (3), 322 (3), 382 (3), MTH/CSC 447 (3), PHL 451 (3).

In addition, one of the following two-course sequences in applied mathematics is required: IME 411, 412; IME 432, 433; MTH 451, 452; MTH 451, 456; MTH 471, 472; STA 409, 412; STA 409, 413.

Students majoring in computer science who leave the University and are subsequently readmitted must follow the computer science curriculum requirements in effect at the time of their readmission, unless an exception is granted by the department and approved by the Dean.

A total of 126 credits is required for graduation. A possible course of studies follows.

Freshman Year
First semester: 16 credits

CSC 110 (3), MTH 141 (4), WRT 101 (3), Basic Liberal Studies requirements or electives (6).

Second semester: 17 credits

COM 101 (3), CSC 211 (4), MTH 142 (4), Basic Liberal Studies requirements or electives (6).

Sophomore Year
First semester: 16 credits

CSC 212 (4), MTH 243 (3), Basic Liberal Studies requirements or electives (9).

Second semester: 15 credits

CSC 311 (3), 340 (3), MTH 215 (3), Basic Liberal Studies requirements or electives (6).

Junior Year
First semester: 16 credits

CSC 301 (3), 331 (3), PHY 213, 285 (4), math elective (3), Basic Liberal Studies requirement or elective (3).

Second semester: 16 credits

Computer science electives (6), PHY 214, 286 (4), Basic Liberal Studies requirements or electives (6).

Senior Year

First semester: 15 credits

CSC 411 (3), computer science electives (6), applied math elective (3), Basic Liberal Studies requirement or elective (3).

Second semester: 15 credits

CSC 412 (3), computer science elective (3), applied math elective (3), Basic Liberal Studies requirements or electives (6).

Minor in Computer Science. Students who wish to declare a minor in computer science must earn 20 credits including CSC 211 (4), 212 (4), 301 (3), 340 (3), 331 (3), and another CSC course at the 300 level or above. In addition, students are expected to complete MTH 141.

Economics

The Department of Economics offers a Bachelor of Arts (B.A.) degree in economics and a Bachelor of Science (B.S.) degree in applied quantitative economics.

Faculty: Professor H. Barnett, chairperson. Professors Burkett, Ramsay, Ramstad, and Starkey; Associate Professors Lardaro, McIntyre, Mead, C. Miller, Sharif, and Suzawa; Assistant Professor Latos.

BACHELOR OF ARTS

Students selecting this field must complete a minimum of 33 credits (maximum 45 credits) in economics, including ECN 201 and 202 (6), 305 and 306 (6), 327, 328 (6), and 445 (3).

In addition, at least 12 credits must be completed from economics courses numbered 300 or above. Students may substitute up to six credits from other departments; three credits from statistics—BAC 201 (3), 202 (3), STA 308 (3), 409 (3), or 412 (3)—and three credits from another related course approved by the department chairperson. These substitutions must be filed with the Office of the Dean.

Students planning to do graduate work in economics are encouraged to take ECN 375, 376 and at least one semester of statistics.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

BACHELOR OF SCIENCE IN APPLIED QUANTITATIVE ECONOMICS

Students in this curriculum may elect one of two options: *economic theory and methods* or *applied economics*. A student must inform the Dean's Office of the option he or she is choosing.

Economic Theory and Methods. A minimum of 30 credits in economics including ECN 201, 202, 305, 327, and 328. In addition, students must complete MTH 141, 142, 215, 243, 307, and 435. This option is recommended for students preparing for graduate study in economics.

Applied Economics. A minimum of 30 credits in economics including ECN 201, 202, 305, 327, 328, 375, 376, and 445. In addition, students must complete COM 101; MTH 451 or STA 308 or BAC 202.

A total of 120 credits is required for graduation.

English

The Department of English offers a Bachelor of Arts (B.A.) degree. The Master of Arts (M.A.) and Doctor of Philosophy (Ph.D.) in English are also offered.

The Department of English offers jointly with the Department of Modern and Classical Languages and Literatures the Bachelor of Arts degree in comparative literature studies (see page 49).

Faculty: Professor K. Stein, chairperson.
Professors Arakelian, Barker, J. Campbell,
Cuddy, Donnelly, Dvorak, Kunz, Leo,
Mathews, Neuse, Okeke-Ezigbo, Pearlman,
Schwegler, Seigel, and Shamoon; Associate
Professors Burke, Cane, Gititi, Hills, Jacobs,
C. Martin, Reaves, Schoonover, Swan, and
Vaughn; Assistant Professors Capello,

Mensel, Reynolds, and Shugar; Adjunct Professor Strommer.

Students selecting this field must complete a minimum of 30 credits (maximum 45 credits), including ENG 241, 251, and 252. Of the remaining 21 credits, three credits must be selected from each of the following groups: Literature or Language Theory (310, 330, 332, 336, 337, 350); Genre (243, 263, 264, 265, 362, 364, 367, 446, 447, 448, 458, 468, 469, 477); Major Figure (280, 380, 384, 472, 485, 486); Historical Period (242, 270, 340, 347, 348, 349, 370, 371, 372, 374, 376, 377, 379); Parallel Studies (205, 247, 248, 260, 300, 305, 335, 346, 360, 385, 445, 474; WRT 301, 333); and six credits from any ENG course. At least 18 credits in ENG courses must be taken at the 300 level or above.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

French

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a concentration in French. The department also offers the Master of Arts (M.A.) program in French.

Faculty: Associate Professor Morello, section head. Professors Chartier, K. Rogers, and Rothschild; Associate Professors Hammadou, Kuhn, and Toloudis.

Students selecting this field are required to complete at least 30 credits (maximum 45 credits) in French, not including FRN 101, 102, 131, 391, 392, 393, or 394. They may elect either a language-civilization option requiring six credits in civilization and a minimum of six credits in literature, or a language-literature option with a minimum of nine credits in literature. Courses in literature may be selected from among FRN 327, 328; courses at the 400 level; and, with permission of the instructor, courses at the 500 level.

Additionally, students with proven competence in French language and literature, with permission of the advisor, the

section head, the department chairperson, and the Dean of the College of Arts and Sciences, may take courses toward their concentration in related fields such as history, linguistics, art, or philosophy.

Students in secondary education with an academic sequence in French (see pages 86–87) must take 36 credits and cannot count FRN 101, 102, 131, 391, 392, 393, 394, or any course in linguistics other than 220, which may be taken if approved by the French Studies Section.

Approval must be filed with the Office of the Dean.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Geography

See Marine Affairs.

Geology

The Department of Geology offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree in geology and a Bachelor of Science (B.S.) degree in geology and geological oceanography. The department also offers the Master of Science (M.S.) degree in geology.

Faculty: Professor Hermes, chairperson. Professors J. Boothroyd and Cain; Associate Professors Fastovsky, Frohlich, and Murray; Assistant Professor Veeger.

BACHELOR OF ARTS

Students selecting this program must complete a minimum of 30 credits (maximum 45 credits) in geology, including GEL 103 (4) and 488 (4).

The B.A. curriculum provides more flexibility than the B.S. curriculum in the choice of courses and offers the possibility of highly individualized programs in consultation with the faculty advisor. The B.A. curriculum can provide an appropriate background for geology-related fields dealing with natural resources, environmental studies, conservation, resource management, and others. Students intending to

pursue graduate studies in the geosciences should consider the B.S. curriculum in geology or complement the B.A. curriculum with a broad background in basic sciences. The federal government identifies GEL 210, 240, 320, 321, 370, 450, and supporting sciences as a minimum background for geologists.

Students interested in teaching earth science should contact the Department of Geology for details about a cooperative program with the Department of Education.

A total of 120 credits is required in the B.A. program. At least 42 of these must be in courses numbered 300 or above.

BACHELOR OF SCIENCE

This curriculum is designed as a foundation for careers in the earth sciences. Students in the curriculum may elect one of the following options: general geology, environmental geology, geophysics, hydrogeology, petrology, or sedimentary geology. These options offer preparation for further work in areas such as environmental geology, mineral and energy resources, hydrology, sedimentology, coastal geology, paleontology, paleoecology, igneous and metamorphic petrology, geochemistry, structural geology, and tectonics.

All B.S. majors are required to complete the following geology courses: 103 (4), 203 (3), 320 (4), 321 (4), 370 (4), 450 (4), 488 (4), and an approved summer field camp (GEL 480) for a minimum of four credits. The field camp is normally undertaken following the junior year.

Students must also complete the following supporting course work: MTH 131 (3) or 141 (4); MTH 132 (3) or 142 (4); BIO 101 (3) or BOT 111 (4); BIO 102 (3) or ZOO 111 (4); CHM 101, 102 (4), and

Students electing the petrology, hydrogeology, or geophysics options may, with the chairperson's approval, take GEL 240 or an additional semester of mathematics, chemistry, or physics in lieu of a second semester of biological sciences. Completion of these courses fulfills the Natural Sciences and Mathematics requirements of the Basic Liberal Studies program.

112, 114 (4); CSC 201 or STA 308 (3); PHY 111, 185 (4) or 213, 285 (4); and PHY 112, 186 (4) or 214, 286 (4).

A total of 126 credits is required for graduation.

General Geology Option. Emphasizes a broad approach to earth science and incorporates introductory courses in each of the major earth science disciplines. This option includes all of the geology and supporting science courses recognized by the federal government as a minimum background for geologists. Students selecting this option are required to complete the following geology courses: GEL 210 (4), 240 (4), 421 (3), and 465 (3).

Environmental Geology Option. Emphasizes the study of geology as it pertains to the environment, including the recognition and reduction of effects of geologic hazards (coastal erosion, volcanic eruptions, earthquakes). Students selecting this option are required to complete the following geology courses: GEL 100 (3), 210 (4), and 301 (3). Students must also take two of the following: GEL 277 (3), 468 (4), 483 (4), 485 (3), 515 (3), 550 (3), 577 (3); NRS 410 (3), 423 (4), 424 (4), 461 (4); and CPL 434 (3).

Geophysics Option. Emphasizes applied geophysics, particularly the use of near-surface geophysical methods such as geoelectrics, gravity, and seismic refraction. Students selecting this option are required to complete the following geology courses: GEL 465 (3), 485 (3), and 487 (3). Students must also take two of the following: GEL 421 (3), 468 (4), 483 (4), 565 (3), and 570 (3).

Hydrogeology Option. Emphasizes the study of groundwater and its interaction with earth materials. This option includes all of the hydrology and supporting science courses recognized by the federal government as a minimum background for hydrologists. Students selecting this option are required to complete the following geology courses: GEL 210 (4), 468 (4), and 483 (4). Students must also take two of the following: GEL 421 (3), 485 (3), 515

(3), 550 (3), 568 (3), 583 (3); NRS 412 (3), 461 (4) or CVE 475 (3); NRS 514 (3); and CPL 434 (3).

Petrology Option. Emphasizes the study of igneous and metamorphic processes through geochemistry, petrography, and structural analysis, leading to interpretations of rock petrogenesis and earth history. Students selecting this option are required to complete the following geology courses: GEL 421 (3), 530 or 531 (3). Students must also take two of the following: GEL 401 (3), 465 (3), 468 (4), 530 or 531 (3), 554 (3), 565 (3), 570 (3), 580 (3), and CHM 431 (3).

Sedimentary Geology Option. Emphasizes the study and interpretation of depositional environments, both in the present and in the geologic record, including the study of sedimentary processes, paleontology, the reconstruction of paleoenvironments, and stratigraphy. Students selecting this option are required to complete the following geology courses: GEL 210 (4), 240 (4), and 468 (4). Students must also take two of the following: GEL 277 (3), 421 (3), 465 (3), 515 (3), 550 (3), 554 (3); NRS 423 (4) and 424 (4).

Geology and Geological Oceanography

The Department of Geology and the Graduate School of Oceanography offer a Bachelor of Science (B.S.) degree in geology and geological oceanography.

Coordinator: Professor Hermes (Geology). The faculty consists of the members of the Department of Geology and the marine geology and geophysics faculty of the Graduate School of Oceanography.

This demanding program includes a comprehensive background in geology and a solid introduction to geological oceanography. The curriculum includes the full set of chemistry, physics, biology, and mathematics courses required for a B.S. in geology. Students in the program will be advised jointly by geology and oceanography faculty members.

A senior research project will be taken in the Graduate School of Oceanography as OCG 493 or 494, under the direction of a GSO faculty member. Three core courses in oceanography—OCG 401, 541, and 542—will provide the student with a good overview of his or her intended field, and also relieve the student of two required courses if he or she continues on to study oceanography at the graduate level at the University of Rhode Island. In addition to this, the student may find opportunities for summer employment or participation in oceanographic research cruises after his or her junior year.

Students completing this program of study will be well prepared to pursue either conventional geology career options or careers in geological oceanography. Technical positions in private or government oceanographic laboratories are available for geological oceanographers with bachelor's degrees. Students who pursue graduate studies can expect to find a high demand for geological oceanographers with advanced degrees. Students entering the URI Graduate School of Oceanography from this program will have a significant head start compared with those entering from most other undergraduate institutions.

The following core courses are required: GEL 103 (4), 210 (4), 240 (4), 320 (4), 321 (4), 370 (4), 421 (3), 450 (4), 465 (3), 480 (4), 488 (4); OCG 401 (3), 541 (4), 542 (4); and OCG 493 or 494 (3). Students must also complete the following supporting course work: MTH 131 (3) or 141 (4) and 132 (3) or 142 (4); CSC 201 (3) or STA 308 (3); BIO 101 (3) or BOT 111 (4); BIO 102 (3) or ZOO 111 (4); CHM 101, 102 (4) and 112, 114 (4); PHY 111, 185 (4) or 213, 285 (4); PHY 112, 186 (4) or 214, 286 (4).

A total of 126 credits is required for graduation.

German

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in German.

Faculty: Professor Grandin, section head. Assistant Professors Hedderich and Kirchner; Lecturers Crossgrove, Einbeck, and von Reinhart.

Students selecting this major complete at least 30 credits (maximum 45 credits) in German, not including GER 101, 102, or 392. At least six credits must be taken at the 400 level in literature.

Students in secondary education (see pages 86–87) must take 36 credits in German.

Students in the International Engineering Program may use six credits of German literature toward the Fine Arts and Literature Basic Liberal Studies requirement.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

History

The Department of History offers a Bachelor of Arts (B.A.) degree. The department also offers the Master of Arts (M.A.) degree in history.

Faculty: Professor Briggs, chairperson. Professors J.A. Cohen, Costigliola, Findlay, Gutchen, C.S. Kim, Klein, Strom, Thurston, and Weisbord; Associate Professor Honhart; Assistant Professors Pegueros and Schwartz; Adjunct Associate Professor Klyberg.

Students selecting this field must complete a minimum of 30 credits (maximum 45 credits) in history, including a minimum of six and a maximum of 12 credits in courses numbered 100 to 299.

The balance of required credits is in courses numbered 300 or above, including at least three courses numbered 400 or above, one of which must be an undergraduate seminar (HIS 495 or 496). Under unusual circumstances, with permission of the department chairperson, a student may substitute, in place of the seminar, HIS 391 leading to a substantial research paper.

Undergraduates wishing to take courses on the 500 level must secure the permission of the chairperson.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Italian

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in Italian.

Faculty: Professor Trivelli, section head. Professor Viglionese; Associate Professor Sillanpoa.

Students selecting this major must complete at least 30 credits (maximum 45 credits), not including ITL 101, 102, 391, 392, 393, or 395. ITL 325, 326 are required for the major.

Students in secondary education (see pages 86–87) must take 36 credits.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Journalism

The Department of Journalism offers the Bachelor of Arts (B.A.) degree.

Faculty: Professor Luebke, chairperson. Associate Professors Levin and Silvia; Assistant Professor deHoyos.

The study and practice of journalism require the acquisition and application of a broad base of knowledge, and therefore journalism majors at the University of Rhode Island pursue a professional course of study that is strongly grounded in the liberal arts. Along with General Education and elective courses from other disciplines, the major requires students to explore the concepts and practices of contemporary American journalism. Within a social, historical, legal, and ethical context, students acquire skills in gathering and synthesizing factual information and communicating it clearly to a variety of audiences. Journalism course work, through individual and

collaborative assignments, focuses on reporting, writing, editing, and producing news for publication or broadcast.

Students who choose journalism as a minor can focus on public relations or media issues, on print or broadcasting. For students majoring in other fields, the department offers courses that provide a forum on the role of mass media in society.

Students majoring in journalism must complete a minimum of 30 credits (maximum 45 credits) in journalism. All journalism majors must complete JOR 115, 220, 310, and 410. In addition, students must select nine credits from skills courses: JOR 230, 320, 321, 330, 331, 340, 341, 342, 420, 430, 441; and three credits from conceptual courses: JOR 210, 211, 311, 313, 415. Any journalism courses may be chosen for the remaining six credits. Students are encouraged to consult with their advisors about the mix of journalism courses that best meets their goals.

Journalism majors must fulfill some of their Basic Liberal Studies requirements by choosing from the following list of courses. The department has identified these courses as important preparation for students to both study and practice journalism.

Fine Arts and Literature¹²: ARH 120 or MUS 101 or THE 100 and ENG 160 or 241 or 242 or 251 or 252 or 280.

Letters¹²: HIS 142 or 341 or 354 and PSC 240 or 341 or 342 or PHL 103 or 204 or 217.

Natural Sciences¹²: BIO 101 (or BOT 111) or BIO 102 (or ZOO 111) or CHM 101 and 102 or GEL 103 or PHY 111 and 185 or PHY 112 and 186.

Social Sciences¹²: PSC 113 or 116 or 201 and SOC 102 or 240 or 242 or 336 or WMS 150.

English Communication¹²: PHL 101.

¹² Students must complete all additional Basic Liberal Studies requirements with courses approved by the College of Arts and Sciences (see page 41).

The only journalism courses open to freshmen are JOR 110 (for nonmajors), JOR 115 (for majors), and JOR 220. Journalism majors are urged to concentrate on their Basic Liberal Studies requirements during their freshman and sophomore years. In addition to the aforementioned required courses, other Basic Liberal Studies courses are recommended as useful for journalism majors. Students should consult with their advisors about complete Basic Liberal Studies requirements and about other courses that meet their individual goals.

Students must earn a grade of C or better in a "skills" course (including JOR 220) to enroll in the next-level course. Only three credits of JOR 220 may be used to satisfy graduation requirements.

The Department of Journalism, in conjunction with the Department of Communication Studies and the Department of Marketing, has developed a minor in public relations.

Students majoring in journalism are encouraged to pursue a minor.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Languages

See Modern and Classical Languages and Literatures.

Latin American Studies

The Departments of Sociology and Anthropology, History, and Modern and Classical Languages and Literatures offer a Bachelor of Arts (B.A.) degree in Latin American studies.

Faculty: Associate Professor Morín, LAS Committee chairperson. LAS Committee members: Professors McNab and Poggie; Associate Professor Gititi; Assistant Professors Pegueros and C. White.

Some faculty members in the College of Arts and Sciences who do not appear as members of the LAS Committee also offer courses acceptable in fulfilling the requirements leading to the B.A. in Latin American studies.

Students selecting this field must complete a minimum of 36 credits as follows: APG 315, HIS 381, 382, and one additional history course dealing with the major; six credits in Spanish or Portuguese from the approved list; LAS 397; PSC 201; ECN 363; and nine credits of electives from the approved list of courses.

Students must file their program of study with the Office of the Dean.

Credits leading to the B.A. in Latin American studies may also be taken at foreign universities or other universities in the United States that offer programs in Latin American studies with the approval of the Latin American Studies Committee, as long as 15 credits in the major are taken at the University of Rhode Island.

Students are highly encouraged to participate in study abroad programs in Latin America.

A list of courses acceptable for this program can be found on page 215. Courses not listed are not necessarily excluded from this program, provided that the subject matter deals in some way with Latin America. The Latin American Studies Committee must approve the student's program including any course substitutions.

The Latin American Studies Committee will assist students in the formulation and approval of their programs. The current coordinator is Thomas Morín, associate professor of Hispanic studies in the Department of Modern and Classical Languages and Literatures.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Linguistics

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in linguistics.

Faculty: Professor K. Rogers, section head.

Students selecting this field must complete a minimum of 27 credits, as follows: at least 12 credits from LIN 202, 220, 302, 320, 330, 497, 498, and the remaining

credits necessary to complete the minimum requirement from APG 200; CMD 373, 375; COM 410; ENG 232, 330, 337, 530, 534, 536; FRN 503; ITL 408; LIN 414, 420; PHL 440; PSY 388.

Students must also attain competence equivalent to the terminal level of 206 in at least one language other than English.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Marine Affairs

The Department of Marine Affairs offers a Bachelor of Arts (B.A.) degree. The department also offers the Master of Marine Affairs (M.M.A.) and Master of Arts in Marine Affairs (M.A.M.A.) degree programs.

Faculty: Professor Juda, chairperson. Professors Burroughs, Marti, D. Nixon, and West; Associate Professor Gordon; Assistant Professor G. Krausse; Professors Emeriti Alexander, Knauss, and Michel.

Students selecting this field are required to complete at least 30 credits (maximum 45 credits) in marine affairs as follows.

All of the following courses (9 credits): MAF 100, 120, 410.

One of the following courses (3 credits): MAF 220, 221.

Five of the following courses (15 credits): MAF 312, 315, 320, 330, 413, 434, 456, 461, 465, 471, 472, 484, and 499.

One additional MAF course must be taken to complete the required 30 credits in marine affairs.

In addition to the above marine affairs requirements, students must take STA 308 and OCG 123 or 401 (if OCG 123 is taken, it may also be used toward fulfilling the Basic Liberal Studies Natural Sciences requirement).

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Students in other New England states may enroll in the marine affairs program under the New England Regional Student Program. See details on page 27.

Mathematics

The Department of Mathematics offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

Faculty: Professor Montgomery, chairperson. Professors Beauregard, Datta, Driver, Finizio, Fraleigh, Grove, Kaskosz, Ladas, Lewis, Liu, Pakula, Shisha, Sine, Suryanarayan, and Verma; Associate Professors D. Clark; Assistant Professors N. Eaton, Merino, and C. Roberts; Professors Emeriti Roxin and Schwartzman; Associate Professor Emeritus R. Caldwell; Assistant Professor Emeritus Barron.

BACHELOR OF ARTS

Students in this curriculum may tailor a program to suit their individual needs and interests. They should meet with their advisor no later than the end of the first semester of the sophomore year to plan a complete program. This program, and any subsequent changes in it, must be approved by the advisor and the department chairperson. It must contain at least 32 credits (maximum 45 credits) in mathematics, and include MTH 141, 142, 215, 243, 307, and 316, plus 12 or more additional credits in mathematics, at least three credits of which should be at the 400 level.

MTH 107, 108, and 111 may not be taken by students majoring in mathematics.

A total of 120 credits is required in the B.A. curriculum. At least 42 of these must be in courses numbered 300 or above.

BACHELOR OF SCIENCE

Students in this curriculum may elect either the general program or the applied mathematics option.

General Program. This program stresses basic theories and techniques, and includes an introduction to the principal areas of mathematics. It is recommended for students considering graduate study in mathematics.

Students in this program must complete MTH 141, 142, 215, and 243. These courses should normally be taken in the freshman and sophomore years. Students must complete an additional 27 credits in mathematics, including MTH 307, 316, 425, 435, 436, and 462. MTH 107, 108, and 111 may not be taken by students majoring in mathematics. The student must take PHY 213, 214, 285, and 286 (which will serve to fulfill the Basic Liberal Studies Natural Sciences requirements). CSC 211 and 212 are recommended.

Applied Mathematics Option. This program is intended for the student who anticipates a career as an applied mathematician or mathematical consultant with an organization such as an industrial or engineering firm or with a research laboratory. The student learns the mathematical ideas and techniques most often encountered in such work. Although a theoretical foundation is developed, the applications are emphasized.

The student must take MTH 141, 142, 215, and 243, preferably by the end of the sophomore year. The student must complete MTH 307 and 435, 436 or 437, 438, and also CSC 211, 212. In addition, the student must select nine credits from Group I (Mathematics), and nine credits from Group II (Applications).

Group I: MTH 143, 244, 316, 322, 418, 441, 444, 451, 452, 456, 461, 462, 471, and 472. Other courses may be used for this group with prior permission of the chairperson.

Group II: CSC 301, 311, 331, 340, 411, 450; ECN 323, 324, 375, and 376; ELE 210; IME 432, 433; MCE 162, 263; MGS 445, 465, 466, 475; PHY 213 and 285, 214 and 286, 322, 331, 341; STA 409, 412; ZOO 460. Other courses may be used for this group with prior permission of the chairperson.

The Office of the Dean must be informed of any substitutions.

Both programs require 130 credits for graduation.

Minor in Mathematics. Students who wish to declare a minor in mathematics must earn credit for MTH 141, 142, 243, or MTH 131, 132, 244; MTH 215; and two three-credit mathematics courses chosen from MTH 307, 316, 322, or any 400-level course.

Medical Technology

See Clinical Laboratory Science.

Military Science (Army ROTC)

The Department of Military Science conducts the Reserve Officer Training Corps (ROTC) program for students who desire to earn commissions as officers in the United States Army. Students must complete the equivalent of eight semesters of military science subjects. Completion of the four-year military science program qualifies students to petition their academic college for a minor in military science. Participation in the program during the first two years (freshman/sophomore) is without any obligation to the military. After completing University degree requirements and departmental requirements, students are eligible to be commissioned as Second Lieutenants in the United States Army in either the Active Army, Army Reserve, or National Guard.

Faculty: Professor McGowan, chairperson. Assistant Professors Morin and Philbrook.

Modern and Classical Languages and Literatures

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree in classical studies, French, German, Italian, linguistics, Russian, and Spanish, which are described in alphabetical order, as well as courses in Hebrew, Japanese, and Portuguese.

The department offers jointly with the Department of English the Bachelor of Arts degree in comparative literature studies (see page 49).

Faculty: Professor Grandin, chairperson.

Music

The Department of Music offers a Bachelor of Arts (B.A.) degree and a Bachelor of Music (B.Mus.) degree. The department also offers the Master of Music (M.M.) degree.

Faculty: Professor R. Lee, chairperson. Professors Dempsey, Fuchs, Gibbs, Kent, Ladewig, Pollart, and Rankin; Associate Professors Livingston and Saladino; Special Instructors Parillo and Smith; Artist Instructors Buttery, J.H. Ceo, Cobb, Dean-Gates, Djokic, Heroux, Hieken, Murray, Noreen, Salazar, Sparks, Stabile, Sullivan, Swanson, Towne, and Vinson; Accompanists Lamoreux and Spry.

BACHELOR OF ARTS

Students selecting music as a major will complete 36 credits (maximum 48) in musicianship, performance, and music electives, as follows:

Musicianship: MUS 131 (3); 121, 122, 225, 226, 227, 228 (12); 221, 222 (6); 223 or upper-division music history (3); 280 (0) and 480 (1).

Performance: four semesters of the principal applied music area, at least two credits per semester (8); three semesters of ensembles appropriate to the principal applied music area (3); seven semesters of MUS 250 (0). A successful audition is required prior to study in the principal applied music area.

Electives: the department strongly recommends that 12 credit hours of electives be taken in music. At least six of these electives should be in upper-division music courses.

Transfer credits in music theory and performance must be validated by placement examination.

Music majors interested in a career in business and the arts should complete the business minor for nonbusiness students described on page 65.

A total of 120 credits is required for graduation. At least 42 of these must be at the 300 level or above.

BACHELOR OF MUSIC

Students can be admitted to the Bachelor of Music degree program only after a successful audition and should contact the Department of Music for specific requirements.

Transfer credits in music theory and performance must be validated by placement examination.

All Bachelor of Music students will take a piano proficiency examination at the conclusion of one year of study or by the end of the second semester of the sophomore year. Students who have not passed the piano proficiency examination by the end of MUS 172 will be expected to take MUS 271, 272 as needed. Failure to pass the proficiency examination or any portion of it requires re-examination in succeeding semesters. No one will graduate with a Bachelor of Music degree until this requirement is fulfilled.

No student should participate in more than three major ensembles in a single semester.

In addition, each student selects one of the following majors.

Music Education. See page 86 for admission requirements for teacher education programs. Students majoring in music education must complete 89 credit hours in Studies in Music and Professional Education, as follows:

Studies in Music (65 credits): seven semesters of the principal applied music area, two credits per semester (14). Seven semesters of MUS 250 (0); senior recital MUS 450 (0). Four semesters of secondary applied music areas, one credit per semester (4); MUS 171 and 172 are required as secondary applied music areas. Students may meet the requirement of MUS 172 by passing the piano proficiency examination before accumulating 60 credits. Seven semesters of major ensembles appropriate to the principal applied music area, at 0 or one credit per semester (6). MUS 131 (3); 121, 122, 225, 226, 227, 228 (12); 317 or 321 (3); 221, 222, 223 (9). MUS

169, 170, 173, 175, 177, 179 (6); 235 (3); 311, 312 (5).

Professional Education (24 credits): MUS 280 (0), 480 (2); 238, 339, 340 (9); EDC 250 (1), 484 (12); and PSY 113, EDC 312 (6) are required as Professional Education courses but are also counted toward the Social Science requirement in the Basic Liberal Studies program. The piano proficiency examination and all courses listed above, with the exception of MUS 480, must be completed before supervised student teaching (EDC 484).

Free electives: three credits.

A total of 131 credits is required for graduation.

Music History and Literature. Students selecting music history and literature must complete the following. Six semesters of the principal applied music area, two credits per semester (12). Eight semesters of MUS 250 (0). MUS 171 and 172 (2). Students may meet the requirements of MUS 172 by passing the piano proficiency examination before accumulating 60 credits. Six semesters of major ensembles appropriate to the principal applied music area (6); two of these ensembles may be chamber ensembles. MUS 131 (3); 121, 122, 225, 226, 227, 228, 317 (15); 221, 222, 223 (9). MUS 420 (3). Five of the following upper-division music history courses: 430, 431, 432, 433, 434, 407, 408 (15); 490 in music history (3). MUS 280 (0) and 480 (1). Music electives (5). Twelve credits of free electives, at least six of which should be upper-division music courses.

Students concentrating in music history and literature must take nine credits of foreign language and must have proficiency through 104 in either French or German.

A total of 128 credits is required for graduation.

Music Theory and Composition. Students selecting music theory and composition must complete the following. Seven semesters of the principal applied music area, two credits per semester (14). Eight

semesters of MUS 250 (0). Four semesters of secondary applied music areas, one credit per semester (4); MUS 171 and 172 are required as secondary applied music areas. Students may meet the requirement of MUS 172 by passing the piano proficiency examination before accumulating 60 credits. Six semesters of major ensembles appropriate to the principal applied music area (6). MUS 131(3); 121,122, 225, 226, 227, 228, 317 (15); 231, 232, 233 (9). Five semesters of applied composition (110V, 210V, 310V, 410V), one or two credits per semester (8). (For the student wishing to specialize in studio composition, three credits of MUS 424 may be substituted for applied composition.) MUS 321 and 420 (6). (For students wishing to specialize in studio composition, three credits of MUS 323 may be substituted for one of these upper-level theory courses.) MUS 490 in music theory and composition (2). An upper-division music history course (3). MUS 235 (3) and 311 (2). MUS 280 (0) and 480 (2). Twelve credits of free electives, at least six of which should be in upper-division music courses.

A total of 128 credits is required for graduation.

Voice. All students in this degree program must take the following music courses. Eight semesters of the principal applied music area. Two semesters of MUS 110 at two credits the first semester and three credits' the second (5); two semesters of MUS 210 at three credits each (6); two semesters of 310 and 410 at four credits each (16). Eight semesters of MUS 250 (0); 350 and 450 (0). MUS 171, 172, 271, and 272 (4). Eight semesters of major ensembles appropriate to the principal applied music area at 0 or one credit per semester (7). Two semesters of secondary or chamber music ensembles (2). MUS 283 (3). MUS 131 (3); 121, 122, 225, 226, 227, 228, 317 (15); 221, 222, 223 (9). MUS 235 (3) and 442 (2). MUS 311 (2). MUS 280 (0); 480 (2). Seven credits of free electives, at least three of which should be in upper-division music courses.

Students majoring in voice must also take nine credits of foreign language in any two or more languages. This requirement may be modified or satisfied by advanced placement.

A total of 128 credits is required for graduation.

Classical Guitar. All students in this degree program must take the following music courses. Eight semesters of the principal applied music area. Two semesters of MUS 110 at two credits the first semester and three credits the second (5); two semesters of MUS 210 at three credits each (6); two semesters of 310 and 410 at four credits each (16). Eight semesters of MUS 250 (0): 350 and 450 (0). MUS 171 and 172 (2). Students may meet the requirement of MUS 172 by passing the piano proficiency examination before accumulating 60 credits. Four semesters of major ensembles (4). Four semesters of guitar ensemble (MUS 399G) and three semesters of playing quitar in chamber music ensembles (MUS 399) (7). MUS 131 (3); 121, 122, 225, 226, 227, 228, 317 (15); 221, 222, 223 (9). An upper-division music history course (3). MUS 235 (3) and 442 (2). MUS 311 (2). MUS 280 (0); 480 (2). Seven credits of free electives, at least three of which should be in upper-division music courses.

A total of 128 credits is required for graduation.

Orchestral Instrument, All students in this degree program must take the following music courses. Eight semesters of the principal applied music area. Two semesters of MUS 110 at two credits the first semester and three credits the second (5); two semesters of MUS 210 at three credits each (6); two semesters of 310 and 410 at four credits each (16). Eight semesters of MUS 250 (0); 350 and 450 (0). MUS 171 and 172 (2). Students may meet the requirement of MUS 172 by passing the piano proficiency examination before accumulating 60 credits. Eight semesters of major ensembles appropriate to the principal applied music area (8). Three semesters of secondary or chamber music ensembles (3). MUS 131 (3); 121, 122, 225, 226,

227, 228, 317 (15); 221, 222, 223 (9). An upper-division music history course (3); an upper-division music theory course (3). MUS 235 (3) and 442 (2). MUS 311 (2). MUS 280 (0); 480 (2). Seven credits of free electives, at least three of which should be in upper-division music courses.

A total of 128 credits is required for graduation.

Piano or Organ. All students in this degree program must take the following music courses. Eight semesters of the principal applied music area. Two semesters of MUS 110 and 210 at three credits each (12); two semesters of 310 and 410 at four credits each (16). Eight semesters of MUS 250 (0); 350 and 450 (0). Four semesters of major ensembles (4). Six semesters of piano accompanying (MUS 371) or playing piano in chamber music ensembles (MUS 399) (6). MUS 131 (3); 121, 122, 225, 226, 227, 228, 317 (15); 221, 222, 223 (9). MUS 420 (3). An upper-division music history course (3). MUS 235 (3) and 442 (2). MUS 311 (2). MUS 280 (0); 480 (2). Nine credits of free electives, at least six of which should be in upper-division music courses.

A total of 128 credits is required for graduation.

Minor in Music. Students who wish to declare a minor in music must earn credit for MUS 121, 122, 131, 171, and 250 for a minimum of two semesters, and two threecredit music history and literature courses at the 200 level or higher. Additionally, students must earn a minimum of four credits in their principal applied music area and four credits in major ensembles appropriate to the principal applied music area.

Students have the option of designing and developing their music minor program under the advisement and sponsorship of a full-time music faculty member. Petitions outlining and justifying the desired music minor program must be presented by the faculty sponsor to the music faculty for approval. A minimum of 18 credits including at least 12 credits at the 200 level or above is required. Petitions must be submitted as early as possible in a student's undergradu-

ate program, and will not be accepted after a student has completed six credits in music courses.

Philosophy

The Department of Philosophy offers a Bachelor of Arts (B.A.) degree. The Master of Arts (M.A.) program in philosophy is also offered.

Faculty: Professor G. Johnson, chairperson. Professors Y. Kim, J. Peterson, Schwarz, Wenisch, and Zeyl; Associate Professors J. Kowalski and Pasquerella; Assistant Professors C. Foster and M. Roberts.

Students selecting this field must complete no less than 30 credits (maximum 45 credits) in philosophy. Students must take at least one course from each of the following: logic (101, 451) and ethics (212, 314, 414). They must take both metaphysics (341) and epistemology (342), plus at least two history of philosophy courses (321-324), and at least one course at the 400 level or above. The remaining nine credits may be chosen freely from the list of PHL courses offered by the department. However, students planning graduate work are advised to take PHL 451 and language studies in French or German.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Physics

The Department of Physics offers a Bachelor of Arts (B.A.) degree and a Bachelor of Science (B.S.) degree. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

Faculty: Professor Malik, chairperson. Professors Bonner, Desiardins, Hartt, Kahn, Kaufman, Letcher, Meyerovich, Muller, Nightingale, Northby, Nunes, and Steyerl; Associate Professor Heskett; Adjunct Professors Cuomo and Goodman; Adjunct Assistant Professor Bozyan; Professors Emeriti Penhallow, Pickart, Stone, and J. Willis.

BACHELOR OF ARTS

Students selecting this program must complete a minimum of 41 credits (maximum 45 credits) in physics, mathematics, and computer science, including: PHY 203, 204, 205, 273, 274, 275 (12), 322 (3), 331 (3), 381, 382 (6), 401 or 402 (1), 451 (3), 491, 492 (3), MTH 244 (3), CSC 201 or 211, 212 (7 or 8).

It is strongly recommended that students take MTH 141 and 142 in the freshman year. If the student is considering graduate study, it is recommended that courses in French, German, or Russian be elected.

A total of 120 credits is required in the B.A. program. At least 42 of these must be in courses numbered 300 or above.

BACHELOR OF SCIENCE

This curriculum provides a general background in both theoretical and experimental physics. It forms a foundation for further study at the graduate level toward an advanced degree, and also prepares the student for a career as a professional physicist in industry or government.

Initiative, independent solution of laboratory problems, and research are encouraged in the advanced laboratory courses.

In addition to the major, students are encouraged to use the large block of elective credits to develop a program of study as a minor (described under "Curriculum Requirements" on page 43) in applied or interdisciplinary fields, such as acoustics, geophysics, optics, energy, astronomy/astrophysics, atmospheric science, computational physics, mathematical physics, physics education, chemical physics, ocean physics, and engineering physics. As with all minors, it will be recorded on the student's final transcript.

The following courses are required for the B.S., but exceptions and/or substitutions are possible, and can be arranged by consulting the department chairperson. For example, a well-prepared student can enroll for physics in the first semester of the freshman year, or courses in a related

discipline may be taken instead of physics courses.

A total of 129 credits is required for graduation.

Freshman Year

First semester: 15 credits

MTH 141 (4), PHY 203, 273 (4), and Basic Liberal Studies requirements and electives (7).

Second semester: 17 credits

MTH 142 (4), PHY 204, 274 (4), CSC 211 (4), Basic Liberal Studies requirements and electives (5).

Sophomore Year

First semester: 17 credits

MTH 243 (3), PHY 205, 275 (4), CSC 212 (4), Basic Liberal Studies requirements (6).

Second semester: 15 credits

MTH 244 (3), PHY 331 (3) and 306 (3), and Basic Liberal Studies requirements (6).

Junior Year

First semester: 18 credits

PHY 322 (3) and 381 (3), MTH 215 (3), Basic Liberal Studies requirements (6), and free electives (3).

Second semester: 16 credits

Mathematics elective at the 300 or 400 level (3), PHY 382 (3) and 420 (3), and free electives (7).

Senior Year

First semester: 15 credits

PHY 451 (3), 483 (3), MTH 461 (3), and free electives (6).

Second semester: 16 credits

PHY 402 (1), 452 (3), 455 (3), 484 (3),

and free electives (6).

Physics and **Physical Oceanography**

The Department of Physics and the Graduate School of Oceanography offer a Bachelor of Science (B.S.) degree in physics and physical oceanography.

Coordinator: Professor Malik (Physics). The faculty consists of the members of the Department of Physics and the physical oceanography faculty of the Graduate School of Oceanography.

This program includes a comprehensive background in physics and a solid introduction to physical oceanography. The curriculum includes a full set of physics and mathematics courses required for a B.S. in physics, with extra emphasis on classical physics, plus additional upperdivision or graduate-level courses in fluid dynamics and physical oceanography.

The senior physics research project (PHY 483 and 484) will be undertaken in the Graduate School of Oceanography under the supervision of a GSO faculty member. In addition, students may find summer employment or participate in oceanographic research cruises after their junior year.

Students graduating in this course of study will be well prepared to pursue careers either in conventional physics or in physical oceanography. Technical positions in private or government oceanographic research laboratories are available for physical oceanographers at the B.S. level. Students who continue on to graduate studies should expect to find high demand for physical oceanographers with advanced degrees. It is recommended that students planning to attend an oceanography graduate school take PHY 520 (Classical Dynamical Theory); students wishing to keep open the option of physics at the graduate level should take PHY 452 (Quantum Mechanics). Students entering the URI Graduate School of Oceanography from this program will have a significant head start compared to those entering from most other undergraduate institutions.

A total of 129 credits is required for graduation.

Freshman Year
First semester: 15–16 credits

MTH 141 (4), PHY 203, 273 (4), CHM 101, 102 (4), Basic Liberal Studies requirements (3-4).

Second semester: 18 credits

MTH 142 (4), PHY 204, 274 (4), CSC 211 (4), Basic Liberal Studies requirements (6).

Sophomore Year

First semester: 17 credits

MTH 243 (3), PHY 205, 275 (4), CSC 212 (4), Basic Liberal Studies requirements (6).

Second semester: 15-18 credits

MTH 244 (3), PHY 306 (3), 331 (3), Basic Liberal Studies requirements (6–9).

Junior Year

First semester: 18 credits

PHY 322 (3), 381 (3), 425 (3), MTH 215

(3), 461 (3), STA 409 (3).

Second semester: 15 credits

MCE 354 (3), MTH elective at the 300 or 400 level (3), PHY 382 (3) and 420 (3), free elective (3).

Senior Year

First semester: 18 credits

OCG 501 (3), PHY 451 (3), 483 (3), 520 (3) (optional), free electives (6).

Second semester: 13-16 credits

OCG 510 (3), PHY 402 (1), 452 (3) (optional), 455 (3), 484 (3), free elective (3).

Political Science

The Department of Political Science offers the Bachelor of Arts (B.A.) degree. The department also offers the Master of Arts (M.A.) in political science and the Master of Public Administration (M.P.A.).

Faculty: Professor Tyler, chairperson.
Professors Hennessey, Killilea, Leduc, L.
Rothstein, A. Stein, and Zucker; Associate
Professors Hamilton, Moakley, and Petro;
Assistant Professor Genest; Professors
Emeriti Milburn, Warren, and S.W. Wood.

Students selecting this field must complete a minimum of 30 credits (maximum 45 credits) in political science, including PSC 113 (3) and 116 (3).

The remaining 24 credits will reflect the student's emphasis, though at least one course must be selected in each of the fol-

lowing three subfields: American politics, world politics, and political theory.

Students completing both the Bachelor of Arts degree in political science and the Bachelor of Science degree in engineering may use courses in the political science major to satisfy Basic Liberal Studies requirements for the Bachelor of Arts degree. The College of Engineering and the Department of Political Science have established a curriculum that allows for the completion of the two degrees and a public-sector internship in five years.

A total of 120 credits is required for the B.A. in political science. At least 42 of these must be in courses numbered 300 or above.

Portuguese

The Department of Modern and Classical Languages and Literatures offers a number of undergraduate courses in Portuguese.

Faculty: Professor McNab, section head.

Psychology

The Department of Psychology offers the Bachelor of Arts (B.A.) degree. The department also offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

Faculty: Professor Kulberg, chairperson.
Professors Berman, Biller, Brady, J.L.
Cohen, Collyer, Faust, Florin, Gelles,
Grebstein, Gross, A. Lott, B. Lott,
Morokoff, Prochaska, Quina, Silverstein, N.
Smith, Stevenson, Valentino, Velicer, W.G.
Willis, and Willoughby; Associate Professors
Harlow and Ruggiero; Assistant Professor
Harris; School Psychology Field Coordinator DeZolt; PCC Interim Director Varna
Garis; Professors Emeriti Merenda and
Vosburgh.

Students in this field may follow either a general program or a preparatory program for an advanced degree.

The general program requires a minimum of 30 credits (maximum 45 credits) to be distributed as follows: PSY 113 (3); at

least one course from the group PSY 232 (3), 235 (3), 254 (3); both PSY 300 (3) and 301 (3); plus additional psychology electives to total 30 credits, with the exception of PSY 499. A grade of C or better is required in each of the following: PSY 113; 232 or 235 or 254; 300.

Students interested in careers at the B.A. level should consult the department's *Psychology Undergraduate Manual* and their academic advisors to select additional courses.

The preparatory program for those considering graduate school adds to the requirements listed above: PSY 232 (3), 235 (3), and 254 (3); at least four courses from the group PSY 310 (3), 335 (3), 361 (3), 381 (3), 384 (3), 385 (3), 388 (3), 391 (3), and 434 (3). Additional courses should be selected only after consultation with an advisor.

A total of 120 credits is required for graduation. At least 42 of these credits must be in courses numbered 300 or above.

Russian

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in Russian.

Faculty: Professor Aronian, section head. Professor K. Rogers.

Students selecting this field must complete at least 30 credits (maximum 45 credits), not including RUS 101, 102.

Students in secondary education (see pages 86–87) must take 36 credits in Russian.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Sociology

The Department of Sociology and Anthropology offers the Bachelor of Arts (B.A.) degree in sociology and the Bachelor of Science (B.S.) degree in applied sociology.

Faculty: Professor Poggie, chairperson.
Professors Carroll, Gelles, Peters, and Reilly;
Associate Professors A. Albert, Danesh,
Mederer, and Travisano; Assistant Professors Cunnigen and Shea.

BACHELOR OF ARTS

Students selecting this curriculum must complete a minimum of 30 credits (maximum 45 credits) in sociology, including: SOC 100, 301, 401, 495, and two courses selected from SOC 240, 242, 336, 413, 428, 452. At least 18 of the 30 credits must be at the 300 level or above.

SOC 495 is to be taken during the senior year. SOC 102 may not be taken for major credit. Students interested in anthropology are referred to the anthropology major previously described in this bulletin.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

BACHELOR OF SCIENCE IN APPLIED SOCIOLOGY

Students in this curriculum may elect either the public policy option or the organizational analysis option. Students must notify the Office of the Dean of the option they are choosing.

Public Policy Option. A minimum of 30 credits in sociology is required including SOC 100, 301, 401, 402, 505 (20); one 400-level sociology course; and six credits in sociology at the 300 level or above.

In addition, students selecting this option must complete ECN 201 and 202 (6); MTH 107 or 108 or 111 or BAC 102 (3); STA 308 and 412 (6); CSC 201 (3); ¹³ WRT 333 (3); HSS 350 (3); PSC 113 (3); PSC 221 and 422 or PSC 304 and 466 or PSC 460 and 466 (6); PSC 369 and 483 (6).

A total of 126 credits is required for graduation.

Organizational Analysis Option. A minimum of 30 credits in sociology is required including SOC 100, 301, 350, 401 (20); one 400-level sociology course; and six

credits in sociology at the 300 level or above.

In addition, students selecting this option must complete ECN 201 and 202 (6); MTH 107 or 108 or 111 or BAC 102 (3); STA 308 and 412 (6); CSC 201 (3); WRT 333 (3); MGT 301, 302, 306, 380, 407, and either BSL 333 or MGT 408 or MGT 453 (18).

Due to limited staff and facilities, admission to the organizational analysis option is open to only 15 students per graduating class. Applications for admission will be reviewed only once each year, usually on or about March 1. Students must apply by the end of February by submitting their names to the University College advisor for sociology or to the chairperson of the Department of Sociology and Anthropology. To be considered for the organizational analysis option, students must have earned a minimum of 45 credits by the application deadline and must have at least a 2.00 quality point average. Preference for abmission will be given to those individuals with the highest quality point averages.

A total of 126 credits is required for graduation.

Spanish

The Department of Modern and Classical Languages and Literatures offers the Bachelor of Arts (B.A.) degree with a major in Spanish. The department also offers the Master of Arts (M.A.) program in Spanish.

Faculty: Professor Gitlitz, section head. Professors Manteiga, Navascués, and Trubiano; Associate Professors Morín and C. White.

Students selecting Spanish as a major will complete a minimum of 30 credits (maximum 45 credits), including SPA 325 and three 400-level courses (excluding SPA 421). SPA 421 may be used as part of the remaining 18 required credits. SPA 101, 102, 121, 391, 392, and 393 cannot be counted toward the major. In addition, students must spend a minimum of one semester (12 credits) in an approved study abroad program in a Spanish-speaking

country. Summer programs will not satisfy this requirement. Students who receive a waiver of the study abroad requirement for personal or academic reasons will complete SPA 315.

Students may also select LIN 202 and 220 and, with permission of the advisor, the section head, the department chairperson, and the Dean, courses in allied fields such as history, art, and anthropology. These requirements are the same for the secondary education major.

A summer field workshop (SPA 310) in Spain or Spanish America is occasionally offered for three to six credits. For information, see the section head.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Speech Communication

See Communication Studies.

Statistical Science

The Department of Computer Science and Statistics offers the Bachelor of Science (B.S.) degree in statistical science. The department also offers the Master of Science (M.S.) degree in statistics and the Doctor of Philosophy (Ph.D.) in applied mathematical sciences with a specialization in statistics.

Faculty: Professor Hanumara, section head. Professor Heltshe; Assistant Professor Kelly; Professors Emeriti Carney, Hemmerle, Lawing, Merenda, and Smith.

The program in statistical science emphasizes the application of statistics to day-to-day problems in our society. Students are required to take courses in mathematics and computer science. Training in an application area is also required. Students graduating from this program are well trained to function in positions such as junior analyst, statistical analyst, statistical programmer, and consultant programmer, or to continue with graduate study in statistics.

Students must complete a minimum of 44 credits as follows: STA 220 (3), 409 (3), 412 (3), 413 (3), 415 (3), 416 (3), MTH 451 (3), 452 (3), CSC 211 (4), 212 (4), 331 (3), 406 (3) or 450 (3); six additional credits chosen from IME 432 (3), 433 (3), 435 (3), or any computer science, mathematics, or statistics courses at the 300 level or above.

Also required are one COM course (3), MTH 141 (4), 142 (4), 215 (3), 243 (3), and one WRT course (3) or CMS 101 (6).

For training in an application area, 12 credits at the 200 level or above in an area other than computer science, mathematics, or statistics are required. Examples of application areas include business, English, physics, psychology, sociology, and zoology. The courses will be selected by the student and the student's advisor from a list prepared by the Department of Computer Science and Statistics in consultation with the application area chairperson.

A list of courses approved for an application area must be filed with the Office of the Dean.

A total of 130 credits is required for graduation. A sample program follows:

Freshman Year

First semester: 16 credits

MTH 141 (4), WRT elective (3), Basic Liberal Studies requirements or electives (9).

Second semester: 16 credits

STA 220 (3), MTH 142 (4), COM elective (3), Basic Liberal Studies requirements or electives (6).

Sophomore Year

First semester: 16 credits

CSC 211 (4), MTH 243 (3), application elective (3), Basic Liberal Studies requirements or electives (6).

Second semester: 16 credits

STA 409 (3), CSC 212 (4), MTH 215 (3), application elective (3), Basic Liberal Studies requirement or elective (3).

Junior Year

First semester: 18 credits

STA 412 (3), MTH 451 (3), 361 (3), application elective (3), Basic Liberal Studies requirements or electives (6).

Second semester: 16 credits

STA 413 (3), MTH 452 (3), CSC 450 (3), application elective (3), Basic Liberal Studies requirements or electives (4).

Senior Year

First semester: 16 credits

STA 415 (3), CSC 331 (3), IME 432 (3), STA 491 (3), Basic Liberal Studies requirements or electives (4).

Second semester: 16 credits

STA 416 (3), 492 (3), IME 433 (3), Basic Liberal Studies requirements or electives (7).

Minor in Statistics. Students who wish to declare a minor in statistics must earn credit for STA 409 (3), 412 (3), MTH 451 (3), and three three-credit statistics courses chosen with prior approval of the department chairperson.

Theatre

The Department of Theatre offers a Bachelor of Arts (B.A.) degree and a Bachelor of Fine Arts (B.F.A.) degree. Permission to register for work toward the B.F.A. in theatre must be obtained through a departmental review.

Faculty: Professor J. Swift, chairperson.
Professor Emery; Associate Professors
G. Armstrong, McGlasson, and Wittwer.
Staff: Technical Director Galgoczy and
Costume Shop Manager Tschantz-Dwyer.
Guest artists supplement the regular faculty in all areas of theatre.

Productions at the University cover the range of theatre forms, ancient to modern, with an emphasis on contemporary and experimental work. All members of the

¹³ BAC 201 and 202 may be substituted for STA 308 and 412, and BAC 207 may be substituted for CSC 201 if these courses are already completed when the student transfers into the B.S. program.

University community may participate in productions.

BACHELOR OF ARTS

The B.A. program in theatre is intended for students who wish to receive a general education in theatre within a liberal arts framework. A total of 33 credits (maximum 45 credits) is required as follows: THE 111 (3), 161 (3), 181 (3), 221 (3), 250 (3), 261 (3), 291 (1), 321 (3), 391 (2). Select nine credits from THE 381, 382, 383, 384, 481, 482, 483, 484. Select three credits from ENG 362, 366, 446, 472, 477. Potential B.A. candidates are urged to complete THE 111, 117, 161, and 181 by the end of their freshman year.

B.A. candidates may elect up to 12 more credits in theatre with the approval of their department advisor.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

BACHELOR OF FINE ARTS

The B.F.A. program in theatre is intended for highly motivated students who wish their education to emphasize a major theatrical field of interest. The program offers concentrated study in acting, design and theatre technology, directing, and stage management. All B.F.A. students are required to complete 34 hours in core courses distributed as follows: THE 111 (3). 161 (3), 181 (3), 221 (3), 250 (3), 261 (3), 291 (2), 321 (3), 351 or 352 (3); two courses from 381 (3), 382 (3), 383 or 384 or 481 (3) to total six credits; and 391 (2). All B.F.A. candidates are urged to select a course from ENG 362, 366, 446, 472, or 477, and to complete THE 111, 161, and 181 by the end of their freshman year. Entrance into the B.F.A. program requires approval from the department chairperson.

In addition to the core requirements, each student selects one of the following areas of specialization. Students must notify the Office of the Dean of the area of specialization they have selected.

Acting. Students selecting acting must complete an additional 38 credits distributed as follows: THE 117 (3), 211 and 212 (4), 213 and 214 (2), 300 or 301 (3), 311 and 312 (6), 313 and 314 (2), 350 (1), 400 or 401 (3), 411 and 412 (6), 417 and 418 (2). Select six credits from THE 217, 227, and 413. Recommended electives include courses in related fields such as anthropology, art, communication studies, history, literature, music, psychology, and sociology.

Design and Theatre Technology. Students selecting design and theatre technology must complete an additional 31 credits distributed as follows: THE 300 (3), 301 (3), 351 or 352 (3) to complete the sequence begun in the core curriculum; 350 (1), 355 (3), 365 (3), 371 (3); and 12 credits selected from 362 (3), 400 (3), 401 (3), 415 (12), 451 (3), 455 (3), 463 (3), 465 (3), 475 (3). Recommended electives include ART 207, 251, 252, and courses in related fields.

Directing. Students selecting directing must complete an additional 33 or 35 credits distributed as follows: THE 300 or 301 (3), 322 (3), 331 (3), 341 (3), 355 or 365 or 371 (3), 400 or 401 (3), 413 (3), 420 (3), 481 or 482 or 483 or 484 (3). They must also complete a one-year sequence in acting selected from the following options:

1. 211 (2), 213 (1), 212 (2), and 214 (1), to total (6)

2. 411 (3), 417 (1), 412 (3), and 418 (1), to total (8)

Recommended electives include courses in anthropology, art history, history, literature, music, psychology, and sociology.

Stage Management. Students selecting stage management must complete an additional 30 credits distributed as follows: COM 320 (3); MGT 300 (3); THE 300 (3), 301 (3), 341 (3), 355 or 365 (3), 371 (3), 400 (3), 401 (3), 441 (3).

B.F.A. students selected for an internship program may substitute up to 12 credits from theatre courses in their area of specialization, subject to departmental approval. Transfer students, late entries into the theatre major, and others wishing to modify this schedule of B.F.A. requirements may do so in consultation with their faculty advisor and with permission of the department chairperson.

A total of 130 credits is required for graduation.

Urban Affairs

The Urban Affairs Program is administered by the graduate program in community planning. The Coordinating Committee offers three majors in the College of Arts and Sciences for the Bachelor of Arts (B.A.) degree: urban social processes in the urban environment, policy formation in the urban environment, and spatial development in the urban environment. The courses that comprise these majors are offered by colleges throughout the University.

The Urban Affairs Program is described on page 32.

Students who select one of these three majors must complete seven courses in the common core and four courses chosen from the specialization courses.

Common Core: URB 210 and 498 or 499 (6); one course selected from CSC 201, STA 220, 308, or 409, BAC 201, PSY 300, SOC 301 (3); three courses selected from CNS 340, CPL 410, ECN 402, HIS 339, PSC 221, 495, SOC 214, 240 (9); and one course selected from HSS 222, 350, MGT 301, PSC 491, 498 (3). It is also recommended that students complete CPL 410.

Each of the majors requires a minimum of 33 credits. Courses applied to fulfilling the core requirements may not be applied to a specialization requirement, nor may courses applied to Basic Liberal Studies requirements be used in the core or specialization areas.

Students majoring in urban affairs must file a program of study with the Office of the Dean.

Students selecting one of these majors should consult the appropriate member of the Urban Affairs Program Coordinating

Committee or the director of the graduate program in community planning for assistance in the formulation and approval of their majors.

A total of 120 credits is required for graduation. At least 42 of these credits must be in courses numbered 300 or above.

Urban Social Processes. This major focuses on the interaction between the individual and the urban social system with a concern for careful theoretical analysis, empirical study, and modification through active intervention. It is designed to examine urban social systems, explore urban social issues, and investigate individual and systems-change strategies. Students who choose this concentration gain an understanding of the systemic forces that act on individuals in urban societies to produce both positive and negative outcomes. Poverty and social class, the welfare system, race, crime, rapid environmental change--all generate social issues that take on particular significance in an urban setting and have a dramatic impact on the lives of urbanites. In addition to a thorough grounding in conceptual approaches, students are directed toward research and intervention techniques that they may extend, with graduate training, into the social sciences, criminology, social work, community planning, and other urban-oriented fields. Students seeking jobs at the baccalaureate level may work in social agencies (e.g., welfare, youth development, the criminal justice system), the governmental departments that sponsor and monitor these agencies, or specialized educational facilities (e.g., halfway houses, preschool enrichment programs, alternative high schools).

Students are expected to satisfy the common core requirements. Urban social processes majors must take SOC 214 as part of the common core and are strongly urged to take ECN 402. In addition, students are required to select four courses from the following: APG 319; CNS 401; COM 315; ECN 403; HDF 220, 434; HIS 339; MGT 301; PSC 420, 483, 486, 495;

PSY 335; SOC 240, 241, 314, 316, 320, 330, 336, 438.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Policy Formation. This major is designed to identify the decision-making processes within the metropolis, examine the ways in which public policies are formulated and implemented, and consider ideas about the substance as well as the outcome of the policy-formation processes. An understanding of such decision-making processes requires knowledge of the political, administrative, managerial, planning, and economic aspects of urban life. Students completing the major should be prepared for entry-level administrative jobs in government agencies, business firms and community organizations, or for activist careers in politics. They might undertake graduate work in law, public administration, community planning, business, or related disciplines.

Students are expected to satisfy the common core requirements. Policy formation majors must take PSC 221 as part of the common core. They are also expected to select four courses from the following: CPL 410; ECN 342, 402, 403; FIN 331, 341; HIS 339, 341; MAF 516; MGT 321, 422, 423; PSC 483, 495, 498; SOC 214. Practicum or internship experience is optional for this major. It may be obtained through URB 397.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Spatial Development. This major gives the student an interdisciplinary viewpoint of the spatial structure and environmental character of the city. The curriculum is designed to focus special attention on the arrangement, allocation, and interrelationships of human and physical resources. Man's relation to the urban ecosystem is examined in terms of the processes, patterns, networks, and activities that produce the spatial and temporal organization of urban communities. Analytical and methodological skills may be acquired from

courses in cartography, remote sensing, and statistics. The structure of the major should prepare the student to deal more effectively with the increasing problems of rapid urban growth and environmental deterioration. These problems have increased the need for a better understanding of the complex metropolis.

Students in the spatial development major can work in a variety of public and private enterprises. Career choices and employment opportunities are available in activities such as urban systems analysis, economic impact studies, cartographic drafting and air photo analysis, industrial location and regional development, and urban environmental problems. Spatial development majors should be prepared for work in organizations or agencies that handle questions such as equal allocation of resources, reduction of regional disparities in goods and services, and development of effective alternatives to problems in housing, poverty, pollution, and other human concerns. These organizations can be found in both the private and the public sectors.

Students are expected to satisfy the common core requirements. Spatial development majors must take CPL 410 as part of the common core. They are also required to select four courses from the following: BSL 333; CPL 434, 530; CVE 315; ECN 402; FIN 341; MAF 516; PSC 466, 495; SOC 214; ZOO 262. Practicum or internship experience is strongly recommended for this major. It may be obtained through URB 397.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

Women's Studies

This interdepartmental program in the College of Arts and Sciences leads to a Bachelor of Arts (B.A.) degree in women's studies. The aim of the program is to provide an option for students who are interested in the interdisciplinary study of the culture and expenences of women.

Faculty: Professor Reilly, director. Assistant Professor Shugar.

The women's studies program requires 30 credits for a major. Five required courses are: WMS 210, 300, 310, 330, 400. Five courses needed to complete the concentration may be selected from: ARH 285; CNS 401; COM 310 (Topics: Rhetoric of the Women's Movement and Rhetoric of Reproductive Rights); COM 420 (Topic: Rhetoric of Early Women Suffragists); ECN 404; ENG 260, 385; FSN 308; HDF 330, 430, 432, 433, 437, 505, 559; HIS 118, 145, 351, 352, 376; LET 151E; MGT 401; NUR 150; PED 375; PHL 210; PSY 466, 470A, 470B, 470C, 480, 625A, 625C; SOC 212, 242, 316, 413, 420, 430; WMS 150, 333, 350, 450. In addition to this list, there are special courses offered by various departments each year that may be selected with prior approval of the Women's Studies Advisory Committee and some additional preapproved topics courses not offered on a regular basis.

Students must file a program of study with the Office of the Dean.

The Women's Studies Advisory Committee also strongly recommends that majors take an additional 18 credits in a specialized area as a minor.

A total of 120 credits is required for graduation. At least 42 of these must be in courses numbered 300 or above.

COLLEGE OF BUSINESS ADMINISTRATION

Frank S. Budnick, Interim Dean Jane M. Stich, Assistant Dean

The six majors in the College of Business Administration allow the student to develop competence in a special field of interest and prepare him or her to meet the changing complexities of life and leadership in the business community. Majors are offered in accounting, finance, general business administration, management, management science and information systems, and marketing.

Basic courses required of all undergraduates at the University introduce the student to the humanities, social sciences, physical and biological sciences, letters, foreign language and culture, and the arts. The business curriculums develop the student's professional capabilities through a broad group of business courses with specialization in one area of study. Business programs provide a strong foundation in accounting, information systems, marketing, organization and management theory, industrial relations, operations management, and statistics. The college emphasizes behavioral studies and computer technology to meet the needs of the business community and society as a whole. Emphasis is placed on the total business environment as a part of the national and world economic structure. Theory, analysis, and decision making are stressed in all areas of learning.

The College of Business Administration is a professional school and has divided its courses into lower and upper divisions. The lower-division courses constitute those taught in the freshman and sophomore years; the upper-division courses constitute those taught in the junior and senior years. Courses taken by transfer students at the lower-division level may be applied to satisfying upper-division requirements only after successful completion of a validating examination. All 500- and 600-level courses offered by departments in the College of Business Administration are open to matriculated graduate students only.

A student enrolled in this college must complete the curriculum in one of the majors and must obtain a cumulative quality point average of 2.00 or better for all required courses in the major. Students wishing permission to substitute required courses or waive other requirements may petition the college's Scholastic Standing Committee. Petition forms are available in the Office of the Dean.

All students are initially enrolled in University College, where they complete General Education and business core courses. Core requirements include accounting,

economics, management science and information systems, mathematics, and statistics. Students apply for transfer after the completion of 45 credits; therefore, the earliest a student may apply is the second semester of the sophomore year. Students who have not satisfied entrance requirements may petition the Scholastic Standing Committee of the college for a waiver of those requirements during their fourth or succeeding semesters. Students in the University College business programs who have not met entrance requirements to the College of Business Administration are permitted to enroll only in 100- and 200-level business courses and in nonbusiness courses.

To ensure that business majors have access to required courses, a strict registration policy will be followed with regard to business courses. Highest priority will be given to students for whom a course is a program requirement, as stated in this bulletin, followed by any student in the College of Business Administration.

Curriculum Requirements

The following two years are common to all majors.

Freshman-Year Program: 15 credits in each semester. The sequence BAC 101, 102 is begun in the first semester and finished in the second, with the balance of credits in General Education.

Sophomore-Year Program: 15 credits in each semester. The ACC 201, 202, ECN 201, 202, and BAC 201, 202 sequences are begun in the first semester and completed in the second. BAC 207 and WRT 227 are taken in alternate semesters. The balance of credits is made up of General Education requirements and free electives.

General Education Requirements. Students are required to select and pass 39 credits of course work from the General Education requirements as listed on pages 29–30. Specific requirements of the College of Business Administration in each group follows.

Group A. A minimum of three credits in literature.

Groups F, L, and N. Any course for which prerequisites have been met.

Group M. BAC 101 in the freshman year.

Group S. ECN 201, 202 in the sophomore year.

Group C. COM 101; WRT 101, 103, 201, or 333 in the freshman year; WRT 227 (Group Cw) in the sophomore year.

Electives. Professional electives are upperlevel courses offered by departments in the College of Business Administration and the Department of Economics. Liberal electives are courses offered by departments outside the College of Business Administration.

Free electives may be either professional or liberal electives.

Minors. College of Business Administration majors are encouraged to develop a non-business minor. Special permission may be given for business majors to pursue a business minor as long as the number of credits for the business minor falls within the 50 percent rule of the American Assembly of Collegiate Schools of Business (AACSB). This rule requires that 50 percent of a student's curriculum is chosen from General Education requirements or courses in colleges other than the College of Business Administration.

International Business Studies Minor. In cooperation with the Department of Modern and Classical Languages and Literatures, the College of Business Administration offers an opportunity for students to include an international emphasis within their undergraduate business major. The business requirements include a major in finance, general business administration, management, or marketing with professional electives in multinational finance, international dimensions of business, and international marketing. The student also develops a language component, choosing from French, German, Italian, or Spanish. In addition, studies in international politics, European history, and courses in history

and literature of the target country are included. Following the junior or senior year, students have the opportunity to compete for summer, semester, or year-long professional internship positions with firms in Europe.

Business Minor for Nonbusiness Students. The College of Business Administration has developed a minor for nonbusiness students that will provide them with an opportunity to gain some business career skills. The minor includes basic foundation courses that must be completed by all students, and upper-level courses selected from the various functional areas. To be eligible for a minor in business administration, nonbusiness students must meet the quality point average requirement for admission to the College of Business Administration, must have completed a math course (M), and must have completed ECN 201, 202; BAC 201 or STA 308; BAC 207 and ACC 201, 202. The minor form will be signed after completion of the aforementioned courses and after verification of the quality point average. To complete the minor, students will select courses at the 300 level from accounting, finance, general business administration, management, management science and information systems, and marketing. Interested students should contact the Director of Undergraduate Programs in the College of Business Administration for further information. Students are required to meet all prerequisites. FIN 301 and MSI 309 have a prerequisite of BAC 202. All 300-level courses in the College of Business Administration require junior standing in a degreegranting college.

Accounting

The Department of Accounting offers a curriculum leading to the Bachelor of Science (B.S.) degree in accounting. The department also offers the Master of Science (M.S.) degree, which provides the education recommended by the American Institute of Certified Public Accountants for the practice of public accounting.

Faculty: Professor Schwarzbach, chairperson. Professors S. Martin, Matoney, and Vangermeersch; Associate Professors Boyle, Geiger, Hazera, and Higgins; Assistant Professors Beckman and Power.

The increased scope of governmental and business activities has greatly extended the field of accounting and has created an unprecedented demand for accountants in both government and industry. This curriculum has been designed to meet that demand.

In addition to providing a general cultural and business background, the curriculum offers specialized training in the fields of general accounting, cost accounting, and public accounting. It offers specific, basic training to students who wish to become industrial accountants, cost analysts, auditors, credit analysts, controllers, income tax consultants, teachers of specialized business subjects, certified public accountants, government cost inspectors, or government auditors.

The broad scope of the courses offered makes it possible for a student who is interested in any of the fields of accounting to obtain fundamental training in the field of his or her choice, whether this training is to be used as an aid to living or as a basis for graduate study.

Junior Year

First semester: 15 credits

ACC 311 (3) and 321 (3), FIN 301 (3), MGT 301 (3), and one free elective (3).

Second semester: 15 credits

ACC 312 (3), 443 (3), MKT 301 (3), MSI 309 (3), and one professional elective (3).

Senior Year

First semester: 15 credits

ACC 431 (3) and 461 (3), BSL 333 (3), ECN or FIN elective (3), ¹⁴ and one free elective (3).

Second semester: 15 credits

ACC 415 (3), MGT 410 (3), one professional elective (3), and two free electives (6).

¹⁴ This may be any 300- or 400-level ECN or FIN course except FIN 341.

Note: All accounting majors are required to complete a minimum of three credit hours in each of the following areas. Behavioral Science: fulfilled by taking PSY 113, SOC 100, 102, or 204 as a free elective. Ethical Foundations: fulfilled by taking PHL 212 as a Letters General Education requirement or as a free elective; or MGT 380 as either a professional elective or a free elective. Political Foundations: fulfilled by taking PSC 113, 116, or GEG 104 as a free elective.

Finance

The Department of Finance and Insurance offers a curriculum leading to the Bachelor of Science (B.S.) degree in finance. The department also offers the Master of Business Administration (M.B.A.) degree with an opportunity for specialization in finance and the Doctor of Philosophy (Ph.D.) degree.

Faculty: Associate Professor Dash, chairperson. Professors Chang, McLeavey, and Rhee; Associate Professors Lai, Lord, and Oppenheimer; Assistant Professors Kang and Y. Lee.

A major in finance prepares the student for managerial positions in the private, public, and nonprofit sectors. The curriculum emphasizes both financial decision making and implementation.

Careers in finance are found in: 1) commercial banking and other financial institutions; 2) security analysis, portfolio, and related investment management; 3) corporate financial management leading to positions as treasurer, controller, and other financial administrative positions; 4) financial administrative positions; 4) financial administration tasks in federal and state agencies as well as in the nonprofit sector in hospitals, nursing homes, and educational institutions.

Junior Year

First semester: 15 credits

FIN 301 (3) and 331 (3), MGT 301 (3), MSI 309 (3), and one liberal elective (3).

Second semester: 15 credits

BSL 333 (3), FIN 322 (3), MKT 301 (3), one professional elective (3), and one liberal elective (3).

Senior Year

First semester: 15 credits

Two finance electives (6), FIN 452 (3), one professional elective (3), and one liberal elective (3).

Second semester: 15 credits

One finance elective (3),¹⁵ MGT 410 (3), two professional electives (6), and one free elective (3).

General Business Administration

The College of Business Administration offers a curriculum leading to the Bachelor of Science (B.S.) degree in general business administration. This curriculum offers the student an opportunity to study all phases of business operation. It is particularly suitable for: 1) those students who are planning to operate their own businesses and are seeking a broad business background; 2) those who are preparing for positions in large organizations with training programs in which specialization is taught after employment; and 3) those who desire a general business background at the undergraduate level prior to taking more specialized graduate work.

Students who major in general business administration will be limited to a maximum of nine credits of professional electives in a specific business or economics major. A general business administration student should take a broad spectrum of courses and not concentrate in one special field of study. For students interested in courses offered outside the College of Business Administration, four professional electives may be taken from the 300- and 400-level courses offered in other colleges.

Beginning with the class entering in the fall of 1995, all general business administration majors must include in their program of study one of the following: three to six credits of internship, a three-credit course in community service or another course outside the Department of Management that offers collaborative experience, a study abroad experience, or a minor.

Junior Year

First semester: 15 credits

FIN 301 (3), MGT 301 (3), MKT 301 (3), MSI 309 (3), and one free elective (3).

Second semester: 15 credits

BSL 333 (3), FIN elective (3), INS 301 (3), MKT elective (3), and one free elective (3).

Senior Year

First semester: 15 credits

MGT 380 (3), two professional electives (6), and two free electives (6).

Second semester: 15 credits

MGT 410 (3), three professional electives (9), and one free elective (3).

Note: One professional elective must be chosen from ECN 338, 344, FIN 452, MGT 453, or MKT 451.

Management

The Department of Management offers a curriculum leading to the Bachelor of Science (B.S.) degree in management. The department also offers the Master of Business Administration (M.B.A.) degree with an opportunity for specialization in management and Doctor of Philosophy (Ph.D.) degree.

Faculty: Professor Sink, chairperson. Professors Coates, Comerford, deLodzia, Laviano, Overton, Schmidt, and Scholl; Associate Professors Beauvais, Cooper, Disney, Dugal, Dunn, and Hickox; Assistant Professor Randall.

This curriculum is intended to provide the student with a background in the conceptual, analytical, and applied aspects of the management of organizations. The areas of study focus on decision making from the perspective of the policy sciences. Courses tend to cluster in the areas of behavioral science, including organizational theory, business law, general business administration and policy, and industrial and labor relations. Courses are carefully integrated to include an overall introduction to business administration, with a number of complementary areas of study in organizational theory and behavior, the management of human resources, industrial and

labor relations, personnel administration, general business administration, and business law.

Careers in business, government, hospitals, and other organizations are open to students who have successfully completed the curriculum. These studies also provide a good background for graduate programs in management.

Beginning with the class entering in the fall of 1995, all management majors must include in their program of study one of the following: three to six credits of internship, a three-credit course in community service or another course outside the Department of Management that offers collaborative experience, a study abroad experience, or a minor.

Junior Year

First semester: 15 credits

MGT 301 (3), MKT 301 (3), MSI 309 (3), one liberal elective (3), and one free elective (3).

Second semester: 15 credits

FIN 301 (3), MGT 302 (3), 303 (3), one liberal elective (3), and one professional elective (3).

Senior Year

First semester: 15 credits

BSL 333 (3), MGT 306 (3), 380 (3), and 407 (3), and one free elective (3).

Second semester: 15 credits

MGT 410 (3), 423 (3), one professional elective (3), one free elective (3), and one liberal elective (3).

Note: One professional elective must be selected from ECN 338, FIN 452, MGT 453, or MKT 451.

Management Science and Information Systems

The Department of Management Science and Information Systems offers a curriculum leading to the Bachelor of Science (B.S.) degree in management science and information systems. The department also offers the Master of Business Administration (M.B.A.) degree with an opportunity

for specialization in management science and information systems and Doctor of Philosophy (Ph.D.) degree.

Faculty: Professor Ebrahimpour, chairperson. Professors C. Armstrong, Budnick, Humphrey, Jarrett, C. Kim, Koza, Mangiameli, Mojena, and Narasimhan; Associate Professors Ageloff, S. Chen, and Westin.

The management science and information systems major reflects the advanced technologies used in business and industry today. Graduates earn a B.S. in business administration with an emphasis on computer applications, information management, and data analysis. Graduates will possess competencies and skills in the application of microcomputer software and related tools. They will also understand the value of "information" and the various technologies used to help organizations use information. In addition, graduates will have a solid grounding in methodologies of data analysis to support business decision making.

Junior Year

First semester: 15 credits

BSL 333 (3), FIN 301 (3), MSI 310 (3), 309 (3), and one liberal elective (3).

Second semester: 15 credits

MGT 301 (3), MSI 350 (3), MKT 301 (3), major elective (3), ¹⁶ and one professional elective (3).

Senior Year

First semester: 15 credits

Major electives (6), ¹⁶ professional electives (6), and one liberal elective (3).

Second semester: 15 credits

MGT 410 (3), one major elective (3), ¹⁶ one professional elective (3), and two free electives (6).

Marketing

The Department of Marketing offers a curriculum leading to the Bachelor of Science (B.S.) degree in marketing. Elective courses in the department expose students to career opportunities in advertising, product management, sales management,

marketing research, and other facets of marketing management. The department also offers the Master of Business Administration (M.B.A.) degree with an opportunity for specialization in marketing and the Doctor of Philosophy (Ph.D.) degree.

Faculty: Professor Della Bitta, chairperson. Professors N. Dholakia, R. Dholakia, E. Johnson, and Venkatesan; Associate Professor Surprenant; Assistant Professors Harlam, D. Rosen, and J. Schroeder.

A major focus of marketing is the determination of product and service needs of consumers and industries. Marketing research, information systems, and analysis are used in the development and management of products and services as well as the design and execution of communications, pricing, and distribution channels. Three unspecified but required marketing electives allow the student to plan, in consultation with his or her advisor, an arrangement of courses to meet individual career objectives. With prior permission of the advisor and chairperson, one marketing elective may be replaced by a course outside the department to enhance career objectives.

Junior Year

First semester: 15 credits

MGT 301 (3), MKT 301 (3), MSI 309 (3), one free elective (3), and one liberal elective (3).¹⁷

Second semester: 15 credits

BSL 333 (3), FIN 301 (3), MKT 311 (3), 415 (3), and one free elective (3).

Senior Year

First semester: 15 credits

MKT 409 (3), one MKT elective (3), two professional electives (6), and one liberal elective (3).¹⁷

¹⁵ Finance electives must be drawn from FIN 401, 420, 425, 433, 441, 452, and 460.

¹⁶ Major electives: MSI 410, 420, 430, 440, 450, 455, 460, 465, 470, 480, 491, 492, 493, and 495.

¹⁷ One liberal elective is to be selected from the following: APG 203; COM 103, 200, 210, 220; PHL 212; PSY 113; SOC 100, 102, 204; WRT 300 and 333.

Second semester: 15 credits

MGT 410 (3), two MKT electives (6), one professional elective (3), and one liberal elective (3).¹⁸

Note: One professional elective must be selected from ECN 338, 344, FIN 452, MGT 453, or MKT 451.

COLLEGE OF CONTINUING EDUCATION

Walter A. Crocker, Jr., Dean Gerald R. DeSchepper, Associate Dean

The College of Continuing Education offers courses and degree programs. designed for adults whose family or work responsibilities have caused an interruption in their formal post-high-school education. Academic programs lead to Bachelor of Science degrees in general business administration; dietetics; food science and nutrition; human development and family studies; industrial and manufacturing engineering; and textiles, fashion merchandising, and design. Bachelor of Arts degrees may be obtained in economics, English, history, and psychology. The Bachelor of General Studies degree offers majors in applied communications, business institutions, health services administration, human studies, and liberal studies. Graduate-level programs include Master of Business Administration, Master of Arts in adult education, Master of Library and Information Studies, Master of Marine Affairs, Master of Public Administration, Master of Science in clinical laboratory science, Master of Science in labor and industrial relations, and advanced and graduate-level courses in computer science, electrical engineering, and mechanical engineering and applied mechanics through special arrangement with several high-technology firms in the state. For curriculum requirements, refer to the appropriate sections in this bulletin.

Certification programs for various professions as well as individual credit and noncredit Continuing Education Unit (CEU) courses are also offered. In addition, institutes and special courses are planned for business, industry, labor, government, and the professions.

Courses are offered on weekday mornings, afternoons, and evenings, and on Saturdays in the fall, spring, and summer. Students enrolling in a degree program may attend at times most convenient for them. The college also operates community centers in Kingston and Middletown.

Summer Sessions. The College of Continuing Education has administrative responsibility for developing, scheduling, and coordinating all summer offerings of the University of Rhode Island. Day and evening courses are offered in two fiveweek sessions at Kingston and in Providence. In addition, a number of special programs, including study in foreign countries, are offered at varying dates in the alternate session. Students may attend either or both campuses and enroll in day or evening courses offered in any summer session. Students expecting to apply summer credit to an academic degree program are advised to obtain prior approval from their academic dean before registering. Maximum course load is seven credits per summer session including simultaneous courses in the alternate session. Exceptions are allowed with permission of the student's academic dean.

Bachelor of General Studies

The College of Continuing Education's own degree program, the Bachelor of General Studies (B.G.S.), is a special undergraduate program for adults who have had no formal schooling for at least five years. The B.G.S. program is useful both for students who have never been to college and for those who dropped out of college at some point in the past. For the latter group, B.G.S. offers a creative approach to bringing forward previous educational experience and applying it to this adult degree program. Because there are several ways to meet admission requirements for the program, the admissions process be-

gins with an interview with a B.G.S. advisor in the Academic Programs Office of the College of Continuing Education.

The B.G.S. program consists of the following six required sections: 1) the Pro-Seminar, 2) General Education requirements, 3) the major curriculum, 4) electives, 5) B.G.S. senior seminars, and 6) senior project.

The Pro-Seminar (4 credits). This required re-entry course (BGS 100) introduces adult students to the processes of academic thought and inquiry, builds confidence in their capacity to do college-level work, and helps them identify their scholastic strengths and interests. During the Pro-Seminar, students are given the opportunity to take the College Level Examinations Program (CLEP) General Examinations (for which there is a fee). CLEP credits may be applied toward the General Education requirements.

General Education Requirements (39 credits). Students in the B.G.S. program must meet the University's General Education requirements as explained on pages 29–30 of this bulletin.¹⁹ B.G.S. students may use BGS 390, 391, and 392 to fulfill General Education requirements or may take other approved General Education courses appropriate to their program. Students should consult frequently with B.G.S. advisors.

Major (45 credits). B.G.S. students can choose from the following majors: applied communications, business institutions, health services administration, human studies, and liberal studies. These majors allow students to take courses in several disciplines to meet their educational goals in a nontraditional way. A major may be made up of a carefully prescribed set of courses or it may be flexible in its requirements, allowing students to work creatively with an advisor to design an individualized major that meets both the student's needs and the general goals of the B.G.S. program.

APPLIED COMMUNICATIONS MAJOR

Students interested in the broad field of applied communications will be interested in this major. It allows a student, working with an advisor, to design an individual major that must then be approved by the program coordinator.

Communications Core (24 credits). These courses, all at or above the 200 level, must be chosen from communication studies, journalism, and writing (or ENG 205, 305, or 310), with 12 credits from one department and six credits from each of the other two. Prerequisite communications courses are COM 101 and WRT 101.

Methodology Course (3 credits). Students may select either COM 206, HSS 320, PSY 300, or STA 308.

Major Seminar (3 credits). Upon achieving senior status, students must take BGS 398.

Area of Emphasis (15 credits). With the help of an advisor, students select 15 credits that will comprise an area of emphasis, which may be used either to further develop skills in communications or for study in related areas. This area of emphasis must be approved by an advisor and the program coordinator by the beginning of the student's junior year.

BUSINESS INSTITUTIONS MAJOR

This is a fully prescribed major with a specific list of required courses:

ACC 201	Elementary Accounting I
ACC 202	Elementary Accounting II
BSL 333	Legal and Ethical Environment
	of Business I
CSC 201	Introduction to Computing I
ECN 201	Principles of Economics:
	Microeconomics
ECN 202	Principles of Economics:
	Macroeconomics
FIN 301	Financial Management
MTH 111	Precalculus
MTH 131	Basic Calculus I
STA 308	Introductory Statistics
MGT 301	Fundamentals of Management
MKT 301	Marketing Principles

MSI 309 Operations Management WRT 227 Business Communications

In addition to the above required courses, students must elect one liberal elective course offered by a department outside their major. Most courses that fulfill these major requirements are available in Providence in the evening. With careful planning, however, it is possible for students to complete approximately two-thirds of the program's requirements in evening courses at the Kingston Campus.

HEALTH SERVICES ADMINISTRATION MAJOR

Like the major in business institutions, the major in health services administration has prescribed courses. These fall into three parts:

Core (12 credits)

NUR 100	Health, Illness, Nursing, and the Ecosystem
HDF 357	Family and Community Health
HSS 320	Introduction to Research in
	Human Science and Services
CSC 101	Computing Concepts

Elementary Accounting I

Administration (15 credits)

ACC 201

ACC 202	Elementary Accounting II
ECN 201	Principles of Economics:
	Microeconomics
ECN 202	Principles of Economics:
	Macroeconomics
PHL 314	Ethical Problems in Society
	and Medicine

Experiential Seminars (15 credits)

HSA 360	Health Services Administration
HSA 380	Introductory Practicum in
	Health Services Administration
HSA 480	Advanced Practicum in Health
	Services Administration

Professional Elective (3 credits)

HUMAN STUDIES MAJOR .

Students interested in the wide range of human studies or human services will be attracted to this major. It permits the student, working with an advisor, to design a major that will meet both personal and career goals. All human studies majors must have their program design approved in advance by an academic advisor and the program coordinator. It must include the following four parts:

Social Science Core (24 credits). Students are required to select 24 credits from three of the following social science departments in the College of Arts and Sciences: Economics, History, Marine Affairs, Political Science, Psychology, and Sociology and Anthropology. These departments determine which of their courses are suitable for the B.G.S. major.

The 24 credits must be distributed as follows: four courses from one department, two courses from a second department, and two courses from a third department. Only two prerequisite or introductory-level courses are allowed in the major. Students should meet with an advisor for more information regarding these courses.

Methodology Course (3 credits). Students are strongly advised to fulfill this requirement by taking HSS 320. This course is offered in Providence during the spring semester only and is usually offered only every second year. Students are advised to plan accordingly. In exceptional cases students may be allowed to meet the methods requirement by taking one of the following courses: HIS 395, PSY 300, SOC 301, or STA 220.

Major Seminar (BGS 397, 3 credits). Students will take this course near the end of their degree program. It will give them an opportunity to review and evaluate the skills and knowledge they have acquired through their major. It is offered only in the fall semester and in alternate years.

¹⁸ One liberal elective is to be selected from the following: APG 203; COM 103, 200, 210, 220; PHL 212; PSY 113; SOC 100, 102, 204; WRT 300 and 333.

¹⁹ Students majoring in health services administration must take MTH 107 or STA 220 as the mathematics requirement.

Area of Emphasis (15 credits). The area of emphasis provides the student with an opportunity to select a group of courses that focus on a particular problem or population of interest. Once a particular focus is identified, students select 15 credits from the following list. All 15 credits must be at or above the 300 level.

African and Afro-American Studies Business Law²⁰ Communication Studies Community Planning Computer Science Consumer Affairs²⁰ **Fconomics** Education²⁰ Food Science and Nutrition²⁰ Health²⁰ History Human Development and Family Studies Human Science and Services **lournalism** Languages (French, Portuguese, Spanish) Management²⁰ Marine Affairs Marketing²⁰ Nursina²⁰ Political Science Psychology Sociology and Anthropology Urban Affairs Women's Studies

LIBERAL STUDIES MAJOR

The major in liberal studies responds to the needs of many adult students who want a bachelor's degree but not in a specific field, find existing degree programs too confining, and have the maturity to work with an advisor to select courses that introduce them broadly to an interdisciplinary field of study.

Competence in a foreign language through the 102 level is a requirement of this major; all other General Education requirements for the program are identical to those of the other B.G.S. majors. Students who are competent in a second language may test out of the language requirement and then choose other courses to replace language courses.

Courses for the major are to be selected from each of four areas in the following list. Students must select a maximum of 18 credits and a minimum of 6 in each area, for a total of 45 credits.

The Classical Tradition (Until 1789). The study of ideas, philosophy, and art that form the basis of Western thought and continue to influence its development. Courses may be selected from art history, classics, English, history, and philosophy.

Modern Culture and Thought (Ninteenth and Twentieth Centuries). Modern trends and developments in the art, history, literature, and philosophy of contemporary Western societies. Courses may be selected from art history, English, history, music, philosophy, political science, and Russian literature and history.

The Cultural and Behavioral Environment.
The study of customs and the economic and geographical factors affecting contemporary society. Courses may be selected from anthropology, economics, geology, history, and religious studies.

Cross-Cultural Communication. Learning and writing about different cultures in either English or another language. Study abroad is strongly encouraged, and credit is granted according to current policy. Courses may be selected from French, German, Italian, journalism, Spanish, speech, and writing. Students choosing a foreign language to fulfill the requirements in this area would already have taken two courses (most commonly, 101 and 102) in the language of their choice, so they would begin to fulfill this requirement with 103.

Electives (27 credits). The electives permit students to complete the B.G.S. degree in a number of creative ways, either through carefully designed work experience internships, or through previous but relevant educational experience, or both. Up to 15 credits may be taken in the University Year for Action program, or students may choose to take courses to fulfill this requirement. BGS 390, 391, and 392 may be counted as electives if they are not used to fulfill General Education requirements.

B.G.S. Senior Seminars. After completing at least 60 credits, a student may begin to

take the sequence of three required sixcredit senior seminars (BGS 390, 391, 392). The senior seminars may be applied either to the General Education requirement or to the elective requirement of the B.G.S. program.

Senior Project (3 credits). All B.G.S. students must complete the BGS 399 Senior Project or a departmentally directed study. Students are required to meet with a B.G.S. advisor to plan a project proposal. This written proposal must meet with the approval of both an appropriate faculty advisor and the B.G.S. coordinator before the student can register for BGS 399.

A total of 118 credits is required for the Bachelor of General Studies degree.

Fees and Finances

Charges and fees set forth in this listing are subject to change without notice. All charges are payable by the semester and are due at the time of registration. Checks or money orders should be made payable to the University of Rhode Island. For financial assistance, refer to "Financial Aid" in this section.

Tuition and Fees. Rhode Island resident undergraduates pay \$131 per credit. Out-of-state undergraduates pay \$452 per credit. Rhode Island graduate students pay \$184 per credit. Out-of-state graduate students pay \$452 per credit. There is also a \$20 registration fee and a \$10 student activity fee payable once each term. The student activity fee supports a student government, career services, and various lectures and cultural events determined by an activities board of elected CCE students. Other fees may apply.

Refund Policy. If a course is officially dropped before the first class meeting, a full refund of tuition will be authorized. After classes have begun, the following refund schedule applies:

Fall and Spring Semesters

Refund

Before first class

Until the close of the add period

After the add period

No refund

Summer Session Refund
Before first class 100%
Until the close of the add period 70%
After the add period No refund

The student activity fee is refundable according to the refund schedule. The registration fee is not refundable except when a course is cancelled or closed by the University. There is no charge for adding a course to replace one dropped or cancelled.

Financial Aid. Only matriculated students enrolled on at least a half-time basis (six credits) may be considered for an award. The Student Financial Aid Office determines eligibility for all grants, loans, and employment, which are awarded on an academic-year basis. Financial aid will be awarded only after a student has applied for a Pell Grant and has submitted a Pell Student Eligibility Report to the Student Financial Aid Office. For more detailed information, contact a peer counselor.

Services for Students

The College of Continuing Education provides a number of services for students in Providence and the community centers. Among these are free academic advising, peer counseling, health education, campus ministry, and, at minimal cost, a testing service. Advisors are available to answer questions about registration, admissions, degree programs, and the College Level Examination Program. The peer counseling service provides students with the opportunity to meet with other adult students who have been trained to help in problem solving, including issues of minority groups and of the handicapped. In testing services, a staff of certified psychologists administers a number of psychological tests and evaluations to individuals and groups to help them make personal or career decisions.

The college also has at its Providence location a bookstore and library, plus a comfortable student center where students and faculty can meet, talk, and relax.

Registration and Admission

Enrollment in University courses offered by the College of Continuing Education is accomplished by completing a registration form prior to the beginning of each semester. Being enrolled in a course is not the same as being admitted to the University. To apply for admission to an undergraduate degree program a student must follow the application procedure stated below. However, credits earned through successful completion of courses may eventually be applied toward a degree program after a student is accepted as a degree candidate.

Beginning students who have been away from school for some time and have little or no course work beyond high school are encouraged to register in the special entry course: BGS 100, the Pro-Seminar.

Any adult may enroll as a nonmatriculated student in the College of Continuing Education. All courses at the University are open to nonmatriculated students; however, day courses at the Kingston Campus are open only on a space-available basis.

All information and forms necessary for registration are included in the semester course list printed two to three weeks before each term begins. The lists, containing up-to-date course offerings and fees, are available during the registration periods, or they may be obtained through written or telephone request.

Application Procedures. A student wishing to enroll in an undergraduate degree program in the College of Continuing Education does so through the Academic Services Office. An initial interview is recommended so that program options may be explored as well as the student's capabilities. A student then files an Application for an Undergraduate Degree and provides the Academic Services Office with official transcripts.

Students admitted to undergraduate degree programs should consult with the appropriate faculty coordinator concerning their major. A work sheet of courses is prepared and maintained as a checklist to-

ward graduation requirements. It is the strict responsibility of the student to file an Intent to Graduate form with the Academic Services Office three semesters in advance of the contemplated date.

COLLEGE OF ENGINEERING

Thomas J. Kim, Dean Harold N. Knickle, Associate Dean Richard M. Vandeputte, Assistant Dean and Academic Advisor

The College of Engineering offers undergraduate majors in chemical, chemical and ocean, civil, computer, electrical, industrial, materials, mechanical, and ocean engineering. In addition, an ocean option is available in mechanical engineering. Because the same fundamental concepts underlie all branches of engineering, the freshman-year courses are quite similar forall curriculums, and the choice of a specific branch of engineering may be delayed until the beginning of either the second term or the second year of study. Students electing one of the programs that include ocean options follow the curriculums for chemical or mechanical engineering for two or three years and enroll in many ocean engineering courses in the junior and senior year.

All of the engineering curriculums are based on an intense study of mathematics, the basic sciences, and the engineering sciences common to all branches of the profession. On this base is built the in-depth study of the important principles and concepts of each separate discipline. These principles are applied to the understanding and solution of problems of current interest and importance in the field. Each curriculum is designed to provide the knowledge and ability necessary for practice as a professional engineer, or for successful graduate study, which may include law,

²⁰ In these departments, only certain courses are appropriate for the human studies major. See an advisor for details.

business administration, or medicine as well as the normal engineering and science disciplines.

The goal of the college is to stimulate the students to become creative, responsible engineers, aware of the social implications of their work, and flexible enough to adjust to the rapid changes taking place in all branches of engineering. Engineers from all fields are heavily involved in the solution of technological and sociotechnological problems. The needs of industry are for balanced teams of both men and women from the different engineering areas.

Entering students who have chosen a specific major should follow the particular program listed below. Those who have decided to major in engineering but have not selected a specific program should select courses in general chemistry; General Education requirements; MTH 141, 142; MCE 162 and/or CHM 101 and 102.

Students who are undecided about engineering but who wish to keep it open as an option should take note that MTH 141, 142; MCE 162 and/or PHY 213 and 285; and a course in chemistry are required for graduation from the College of Engineering, and are prerequisites for many engineering courses. They must be taken before transferring from University College to the College of Engineering.

To transfer from University College to the College of Engineering, students must not only have completed 24 credits with a quality point average of 2.00 or better, they must also have completed all of the required mathematics, science, and engineering courses of the freshman year with a quality point average of 2.00 or better.

To meet graduation requirements, students enrolled in the College of Engineering must satisfactorily complete all courses of the curriculum in which they are registered and must obtain a quality point average of 2.00 or better in all required science, mathematics, and engineering courses (including professional electives).

International Engineering Program. The College of Engineering also offers a fiveyear International Engineering Program (IEP) in which students earn two degrees: a Bachelor of Science in engineering and a Bachelor of Arts in a foreign language. The foreign languages currently available as part of the IEP are Geman and French. In addition to their engineering courses, students study the foreign language, business, and culture. They spend six months abroad in a professional internship in Austria, France, Germany, or Switzerland. Upon graduation, students are well prepared to compete in the global market-place.

To enroll, a student simply registers for the appropriate language course for engineering students, and follows the recommended outline of courses. In 1992, the IEP was selected as the recipient of the Award for Educational Innovation by ABET, the national Accreditation Board for Engineering and Technology.

Cooperative Education Program. Optional for juniors and seniors in all engineering departments, the Cooperative Education Program offers placements for part-time or full-time work directly related to a student's field of study. Enrollment information may be obtained from the Cooperative Education Office, 202 Lippitt Hall.

Engineering and M.B.A. Program. This five-year program offers students the opportunity to earn a Bachelor of Science in engineering and a Master of Business Administration. Students who have a 3.00 or better grade point average may enroll during their senior year with successful completion of the Graduate Management Admissions Test.

General Education Requirements. Engineering students must meet the University's General Education requirements listed on pages 29–30 of this bulletin, except that only three credits are required in the foreign language or culture component. In these courses, students are exposed to and challenged by concepts from the humanities and social sciences to ensure that the social relevance of their engineering activities will never be forgotten. In selecting courses to satisfy these require-

ments, students should consult with their advisors to be certain that they have chosen courses that satisfy both the University requirements and the requirements of the Accreditation Board for Engineering and Technology. The requirements in mathematics and natural sciences are satisfied by required courses in the engineering curriculums. Three credits must be taken in the Foreign Language or Culture group, and six credits each in English Communication, Fine Arts and Literature, Letters, and Social Sciences. In two of the latter three groups, both courses must be taken in the same department. The second course may not be at the 100 level, unless it has the first course as a prerequisite or is an obvious continuation of the first.

Freshman Year. All engineering curriculums have similar programs during the freshman year. This provides some degree of flexibility to those students who are uncertain about their choice of curriculum. Except for majors in chemical engineering, chemical and ocean engineering, computer engineering, and materials engineering, all engineering students take the following 17 credits in the first semester.²¹

- 3 CHM 101 General Chemistry Lecture I
- 1 CHM 102 Laboratory for Chemistry 101
- 4 MTH 141 Introductory Calculus with Analytic Geometry
- 3 ECN 201 Principles of Economics: Microeconomics
- 3 CSC 201 Introduction to Computing I or General Education requirement
- 3 General Education requirement

Students who are still undecided about their choice of major after completing the first semester should review their choice of courses for the second semester with their advisor to be certain that they meet the prerequisites for the sophomore year.

Computers. Computational facilities in the College of Engineering include over 40 SUN Sparc workstations supported by three SUN file servers. Over 50 486 PCs are networked using five DEC 5000 servers. The college has an Ethernet backbone, with a fiber-optic link to the Kingston

Campus network. The University is connected to the Internet, giving access to E-mail, World Wide Web, Gopher, and Usenet News.

Accreditation. The curriculums in chemical, civil, computer, electrical, industrial, and mechanical engineering are currently accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Biomedical Electronics Engineering

The Bachelor of Science (B.S.) degree in biomedical electronics engineering is offered by the Department of Electrical Engineering.

The undergraduate program was suspended, effective June 1984. No new students are being accepted into the program.

Biomedical engineers design medical instruments such as electrocardiographs, electroencephalographs, blood analyzers, and X-ray machines for diagnosis of disease and equipment such as radiotherapy machines, pacemakers, and lasers for surgery, and develop artificial organs for prosthesis. They design computer systems to help physicians monitor critically ill patients, to correlate a multitude of disease symptoms in order to diagnose a disease, and to determine the best course of treatment.

Biomedical engineers are employed in:
1) the medical instrument industry, where they design, manufacture, sell, and service medical equipment; 2) hospitals, which employ engineers in increasing numbers to select, evaluate, and maintain complex medical equipment and to train the hospital staff in their use; and 3) medical and biological research centers, which use the specialized training of the biomedical engineer to apply engineering techniques in research projects.

The biomedical electronics engineering program combines study in the biological

sciences with those areas of engineering that are particularly important for the application of modern technology to medicine. With a few minor elective changes the program also satisfies the entrance requirements of most medical schools, but students who plan to go on to medical school should consult the premedical advisor and the coordinator of the biomedical electronics engineering program.

For transfer from University College to the College of Engineering in the biomedical electronics engineering program, students must have completed all science, mathematics, and engineering courses required during the first two semesters with a quality point average of 2.00 or better.

The major requires 139 credits.

Freshman Year

First semester: 17 credits

- 3 CHM 101 General Chemistry Lecture I
- 1 CHM 102 Laboratory for Chemistry 101
- 4 MTH 141 Introductory Calculus with Analytic Geometry
- 3 ECN 201 Principles of Economics: Microeconomics
- 3 CSC 201 Introduction to Computing I
- 3 General Education requirement

Second semester: 19 credits

- 4 CHM 124 Introduction to Organic Chemistry
- 4 MTH 142 Intermediate Calculus with Analytic Geometry
- 3 PHY 213 Elementary Physics I
- 1 PHY 285 Physics Laboratory I
- 4 ZOO 111 General Zoology
- 3 General Education requirement

Sophomore Year

First semester: 16 credits

- 3 ELE 211 Linear Systems and Circuit Theory I
- 3 ELE 210 Introduction to Electricity and Magnetism
- 1 ELE 214 Circuits Laboratory I
- 3 MTH 243 Calculus for Functions of Several Variables
- 3 ZOO 345 Basic Animal Physiology
- 3 General Education requirement

Second semester: 19 credits

- 3 ELE 205 Microprocessor Laboratory
- 3 ELE 212 Linear Systems and Circuit Theory II
- 1 ELE 215 Circuits Laboratory II
- 3 MCE 263 Dynamics
- 3 MTH 362 Advanced Engineering Mathematics I
- 3 PHY 223 Introduction to Acoustics and Optics
- 3 General Education requirement

Junior Year

First semester: 18 credits

- 3 ELE 313 Linear Systems
- 3 ELE 322 Electromagnetic Fields I
- 3 MTH 363 Advanced Engineering Mathematics II
- 3 PHY 341 Introductory Modern Physics
- 6 General Education requirements

Second semester: 16 credits

- 3 ELE 314 Linear Systems and Signals
- 3 ELE 323 Electromagnetic Fields II
- 4 ELE 342 Electronics I
- 3 PHY 420 Introduction to Thermodynamics and Statistical Mechanics (preferred) or MCE 341 Fundamentals of Thermodynamics
- 3 General Education requirement

Senior Year

First semester: 18 credits

- 5 ELE 443 Electronics II
- 3 ELE 588 Biomedical Engineering I
- 1 ELE 481 Biomedical Engineering Seminar I
- 3 General Education requirement
- 3 Mathematics elective
- 3 Professional elective²²

²¹ In addition, students in the civil and industrial engineering programs take EGR 102 (one credit) in the first semester.

²² Select from approved list (see advisor). Professional electives approved for this program include: first semester—BCH 311, 403, 435; CHM 335, 431; CSC 311; ELE 331, 457, 581; MCE 354; MTH 244, 471; and ZOO 441; second semester—BCH 302; CHM 336, 432; CSC 311, 400; ELE 436, 444, 458, 484, 581; MCE 354; and MTH 244, 472.

Second semester: 16 credits

- 3 ELE 589 Biomedical Engineering II
- 1 ELE 482 Biomedical Engineering Seminar II
- 3 ZOO 442 Mammalian Physiology
- 6 Professional electives²³
- 3 Free elective

Chemical Engineering

The Department of Chemical Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in chemical engineering that is accredited by ABET.²⁴ A curriculum leading to the Bachelor of Science degree in chemical and ocean engineering (unaccredited) is offered in cooperation with the Department of Ocean Engineering. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees are also offered by the department.

Faculty: Professor Rose, chairperson.
Professors S. Barnett, Bose, R. Brown,
Gregory, Knickle, and Rockett; Associate
Professor Gray; Assistant Professor RiveroHudec.

The chemical engineer is concerned with the application and control of processes leading to changes in composition. These processes are most frequently associated with the production of useful products (chemicals, fuels, metals, foods, pharmaceuticals, paper, plastics, and the like), but also include such seemingly unrelated matters as removal of toxic components from the blood by an artificial kidney, environmental cleanup, and semiconductor processing. The chemical engineer's domain includes more efficient production and use of energy, processing of wastes, and protection of the environment.

Chemical engineers have a strong foundation in chemistry, physics, mathematics, and basic engineering. Chemical engineering courses include the use of digital computers, thermodynamics, transport phenomena, mass transfer operations, metallurgy, materials engineering, process dynamics and control, kinetics, and plant

design. The student has the opportunity to operate small-scale equipment to determine efficiencies and operating characteristics, and to visit local industry. Intensive work in the solution of complex problems is given in which economics and optimization of engineering design are emphasized.

A chemical engineer with a background in both chemistry and engineering can apply his knowledge of research and development, design, production, and manufacturing not only to the areas listed above, but to many others such as textiles, dyes, petroleum, ceramics, paint, and rubber, as well as to biomedical, biochemical, ocean, space, nuclear energy, and environmental problems and processes.

About 25 percent of graduates work with environmental agencies. Many are employed by the department's Center for Pollution Prevention as undergraduates.

The major requires 134 credits.

Freshman Year
First semester: 16 credits

- 5 CHM 191 General Chemistry²⁵
- 1 CHE 101 Foundations of Chemical Engineering
- 4 MTH 141 Introductory Calculus with Analytic Geometry
- 6 General Education requirements²⁶

Second semester: 17 credits

- 5 CHM 192 General Chemistry²⁵
- CHE 102 Introduction to Chemical Engineering
- 4 MTH 142 Intermediate Calculus with Analytic Geometry
- 3 PHY 213 Elementary Physics I
- 1 PHY 285 Physics Laboratory I
- 3 ECN 201 Principles of Economics: Microeconomics

Sophomore Year
First semester: 17 credits

- 3 CHE 212 Chemical Process Calculations
- 4 CHM 291 Organic Chemistry
- 3 MTH 243 Calculus for Functions of Several Variables
- 3 PHY 214 Elementary Physics II
- 1 PHY 286 Physics Laboratory II
- 3 General Education requirement²⁶

Second semester: 16 credits

- 3 CHE 272 Introduction to Chemical Engineering
- 3 CHE 332 Physical Metallurgy or approved professional elective
- 4 CHM 292 Organic Chemistry
- 3 ELE 220 Passive and Active Circuits
- 3 MTH 244 Differential Equations

Junior Year

First semester: 17 credits

- 3 CHÉ 313 Chemical Engineering Thermodynamics
- 3 CHE 347 Transfer Operations I
- 3 CHM 431 Physical Chemistry
- 2 CHM 335 Physical Chemistry Laboratory
- 3 Approved mathematics elective
- 3 General Education requirement²⁶

Second semester: 17 credits

- 3 CHE 314 Chemical Engineering Thermodynamics
- 2 CHE 322 Chemical Engineering Microlaboratory
- 3 CHE 348 Transfer Operations II
- 3 CHE 425 Process Dynamics and Control
- 3 CHM 432 Physical Chemistry
- 3 General Education requirement²⁶

Senior Year

First semester: 17 credits

- 1 CHE 328 Industrial Plants
- 2 CHE 345 Chemical Engineering Laboratory
- 2 CHE 349 Transfer Operations III
- 3 CHE 351 Plant Design and Economics
- 3 CHE 464 Industrial Reaction Kinetics
- 3 PHY 341 Introductory Modern Physics or approved professional elective
- 3 General Education requirement²⁶

Second semester: 17 credits

- 2 CHE 346 Chemical Engineering Laboratory
- 3 CHE 352 Plant Design and Economics
- 3 Approved professional elective
- 3 CVE 220 Mechanics of Materials or approved professional elective
- 6 General Education requirements²⁶

Chemical and Ocean Engineering. Students enrolled in this curriculum will follow the program of study for chemical engineering during the freshman, sophomore, and junior years. The senior year curriculum follows.

The major requires 136 credits.

Senior Year

First semester: 18 credits

- 1 CHE 328 Industrial Plants
- 2 CHE 349 Transfer Operations III
- 3 CHE 351 Plant Design and Economics
- 3 CHE 403 Introduction to Ocean Engineering Processes I
- 3 CHE 464 Industrial Reaction Kinetics
- 3 OCE 410 Basic Ocean Measurements
- 3 General Education requirement²⁶

Second semester: 18 credits

- 3 CHE 352 Plant Design and Economics
- 3 CHE 404 Introduction to Ocean Engineering Processes II
- 3 CHE 534 Corrosion and Corrosion Control
- 3 OCG 401 General Oceanography
- 6 General Education requirements²⁶

Civil and Environmental Engineering

The Department of Civil and Environmental Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in civil engineering. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees are also offered by the department.

The Bachelor of Science program in civil engineering is accredited by the Accreditation Board for Engineering and Technology.

Faculty: Professor Urish, chairperson. Professors Kovacs, K. Lee, McEwen, Poon, Silva, and R. Wright; Associate Professors Karamanlidis, Marcus, Thiem, Tsiatas, and Veyera; Adjunct Professor T. Wright; Adjunct Associate Professors Huston and Shaw; Adjunct Assistant Professors Alkhatib, Badorek, and Mogawer.

Civil engineers are responsible for researching, developing, planning, designing, constructing, and managing many of the complex systems and facilities essential to our modern civilization. These include: water supply and pollution control systems; all types of transportation systems, from pipelines to city streets; and structural systems from residential buildings to city skyscrapers, power plants, and offshore platforms. Civil and environmental engineers play important roles in planning and administration with government agencies at all levels, especially those dealing with public works, transportation, environmental control, water supply, and energy.

The curriculum provides the students with sufficient background to pursue graduate study or to enter directly into professional practice in industry or government after graduation. The first two years are devoted largely to courses in mathematics, chemistry, physics, and engineering science common to all engineering curriculums. In their last two years, students have a large degree of flexibility in developing their own programs to meet their own professional goals through the selection of professional electives in environmental engineering, soil mechanics and foundations, structural engineering, and transportation and construction.

No later than the first midsemester of the junior year each student is required to file a proposed plan of study which has been approved by the faculty advisor and the department chairperson. Professional electives and General Education requirements must be selected in consultation with the advisor to satisfy the Accreditation Board for Engineering and Technology accreditation requirements.

The major requires 133 credits.

Freshman Year First semester: 18 credits

- 3 CHM 101 General Chemistry Lecture I
- 1 CHM 102 Laboratory for Chemistry 101
- 1 EGR 102 Basic Graphics
- 4 MTH 141 Introductory Calculus with Analytic Geometry

- 3 CSC 200 Introduction to Computer Programming for Engineers
- 3 ECN 201 Principles of Economics: Microeconomics
- 3 General Education requirement

Second semester: 18 credits

- 4 MTH 142 Intermediate Calculus with Analytic Geometry
- MCE 162 Statics
- 3 PHY 213 Elementary Physics I
- 1 PHY 285 Physics Laboratory I
- GEL 103 Physical Geology
- General Education requirement

Sophomore Year First semester: 16 credits

- 3 MTH 243 Calculus for Functions of Several Variables
- 3 MCE 263 Dynamics
- 3 PHY 214 Elementary Physics II
- 1 PHY 286 Physics Laboratory II
- 3 CVE 216 Introduction to Civil and Environmental Engineering Systems
- 3 General Education requirement

Second semester: 15 credits

- 3 MTH 244 Differential Equations
- 3 CVE 220 Mechanics of Materials
- 3 ELE 220 Passive and Active Circuits
- 3 General Education requirement
- 3 Approved statistics elective

²³ Select from approved list (see advisor). Professional electives approved for this program include: first semester—BCH 311, 403, 435; CHM 335, 431; CSC 311; ELE 331, 457, 581; MCE 354; MTH 244, 471; and ZOO 441; second semester—BCH 302; CHM 336, 432; CSC 311, 400; ELE 436, 444, 458, 484, 581; MCE 354; and MTH 244, 472.

Accreditation Board for Engineering and Technology through its Engineering Accreditation Commission in cooperation with the Committee on Education and Accreditation of the American Institute of Chemical Engineers.

²⁵ For CHM 191 and 192 (10 credits), students may substitute CHM 101, 102, 112, 114, and 212 (12 credits).

²⁶ In order to meet accreditation requirements, these courses, together with at least 18 credits of the General Education requirements, must be chosen from a group approved by the chairperson, with the approval of an advisor designated by the chairperson.

Junior Year

First semester: 17-18 credits

- 2 CVE 322 Civil Engineering Laboratory²⁷ or 3 General Education requirement
- 3 MCE 354 Fluid Mechanics
- 3 CVE 352 Structural Analysis I
- 4 CVE 374 Environmental Engineering
- 4 CVE 381 Geotechnical Engineering
- CVE 397 Introduction to Civil Engineering Design

Second semester: 16-17 credits

- 2 CVE 322 Civil Engineering Laboratory²⁷ or 3 General Education requirement
- 4 CVE 347 Highway Engineering
- 3 CVE 353 Structural Analysis II
- 4 CVE 370 Hydraulic Engineering
- 3 General Education requirement

Senior Year

First semester: 17 credits

- 3 CVE 465 Analysis and Design of Concrete Structures
- 2 CVE 497 Civil Engineering Design
- 9 Professional electives
- 3 General Education requirement

Second semester: 15 credits

- 3 CVE 498 Civil Engineering Design
- 3 Professional elective
- 3 Free elective
- 3 General Education requirement
- 3 Approved science elective²⁸

Professional Electives. Nine of the 12 credits required for professional electives must be in the Department of Civil and Environmental Engineering and must include at least five design credits. A list of courses and their design credits is available from the Department of Civil and Environmental Engineering.

Computer Engineering

The Bachelor of Science (B.S.) degree in computer engineering is offered by the Department of Electrical and Computer Engineering. Specialization in computer engineering is also available within the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) programs in electrical engineering.

Coordinator: Professor Cooley (Electrical and Computer Engineering). Associate Professors Sun and Q. Yang; Assistant Professors Lo and Uht.

The Department of Electrical and Computer Engineering will no longer admit students into its sophomore courses who have not been formally admitted into electrical engineering or computer engineering.

Computers and computer-like devices have transformed society, particularly in the technologically advanced countries. Computers are usually associated with data processing and high-technology control and signal-processing functions such as numerically controlled machine tooling, computer-aided machine design, tomography and medical imaging, speech analysis and synthesis, and picture and data communication. Both mini- and microcomputers now play an important role in our everyday work and play environments. Word processing, paperless offices, and microprocessor-controlled games are prominent examples.

Computer engineering is concerned with the design and efficient use of large or small computers and the development of other machines and instruments that contain computers, or parts of computers, as essential building blocks, from the hand-held calculator to the large multi-terminal computer and the programmable assembly machine. A programmable machine is one that will change its operation in response to a program or command.

Computer engineers may be employed in the design, service, operation, and sale of computer systems as well as the design, service, and sale of complex machinery, instruments, and systems—such as an automated subway—that require computers as essential parts. The employers may be industrial organizations, transportation companies, federal laboratories, or local government.

The computer engineer must understand the fundamentals of computer logic and programming as well as the fundamentals of electronics and general engineering—mathematics, mechanics, electricity and magnetism, and heat transfer.

Engineers use all of this knowledge to create new devices and systems that satisfy perceived human needs.

To transfer from University College to the College of Engineering in the computer engineering program, students must have completed all science, mathematics, and engineering courses required during the first two semesters with a quality point average of 2.00 or better.

The major requires 136 credits.

Freshman Year First semester: 16 credits

- 4 CSC 211 Introduction to Computer Science I
- 3 CHM 101 General Chemistry Lecture I
- 1 CHM 102 Laboratory for Chemistry 101
- 4 MTH 141 Introductory Calculus with Analytic Geometry
- 3 PHY 203 Elementary Physics I
- 1 PHY 273 Elementary Physics Laboratory I

Second semester: 18 credits

- 3 PHY 204 Elementary Physics II
- 1 PHY 274 Elementary Physics Laboratory II
- 4 MTH 142 Intermediate Calculus with Analytic Geometry
- 4 CSC 212 Introduction to Computer Science II
- 3 ECN 201 Principles of Economics: Microeconomics
- 3 General Education requirement

Sophomore Year First semester: 17 credits

- 3 ELE 201 Digital Circuit Design
- 1 ELE 202 Digital Circuit Design Laboratory
- 3 PHY 205 Elementary Physics III
- 1 PHY 275 Elementary Physics Laboratory III
- 3 MTH 243 Calculus for Functions of Several Variables
- 3 CSC 205 Computational Methods for Engineers and Scientists
- 3 General Education requirement

Second semester: 17 credits

- 3 ELE 205 Microprocessor Laboratory
- 3 ELE 212 Linear Circuit Theory

- 2 ELE 215 Linear Circuits Laboratory
- 3 MTH 362 Advanced Engineering Mathematics I
- 3 PHY 306 Elementary Modern Physics
- 3 CSC 311 Machine and Assembly Language Programming

Junior Year

First semester: 18 credits

- 3 ELE 331 Introduction to Solid State Devices
- 3 CSC 411 Computer Organization
- 3 MTH/CSC 447 Discrete Mathematical Structures
- 3 Engineering elective²⁹
- 6 General Education requirements

Second semester: 16 credits

- 4 ELE 342 Electronics I
- 3 ELE 405 Digital Computer Design
- 3 CSC 301 Fundamentals of Programming Languages
- 6 General Education requirements

Senior Year

First semester: 17 credits

- 3 CSC 331 Data Structures
- 3 ELE 408 Computer Organization Laboratory
- 4 ELE 447 VLSI Design and Simulation
- 3 IME 411 Probability for Engineers or MTH 451 Introduction to Probability and Statistics
- 3 General Education requirement

Second semester: 17 credits

- 3 CSC 412 Operating Systems
- 3 ELE 437 Computer Communications
- 4 ELE 444 Advanced Electronics Design
- 1 ELE 400 Introduction to Professional Practice
- 3 Free elective
- 3 General Education requirement

Minimum Requirements

Humanities and Social Sciences (27 credits): see the General Education requirements for the College of Engineering, listed on page 72. Students should consult their advisors regarding distribution of courses and approved credits.

Mathematics (17 credits): MTH 141, 142, 243, 362, 447.

Basic Sciences (19 credits): CHM 101, 102; PHY 203, 273, 204, 274, 205, 275, 306.

Computer Science (24 credits): CSC 205, 211, 212, 301, 311, 331, 411, 412.

Engineering Sciences and Design (42 credits): ELE 201, 202, 205, 212, 215, 331, 342, 405, 408, 437, 444, 447; IME 411 or MTH 451; engineering elective.²⁹

Electrical Engineering

The Department of Electrical and Computer Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees are also offered by the department.

Faculty: Professor Ohley, chairperson. Professors Boudreaux-Bartels, Daly, L. Jackson, Kay, Kumaresan, Lengyel, Lindgren, Mardix, Mitra, Sadasiv, Sunak, Tufts, and Vaccaro; Associate Professors Fischer, Lo, Sun, Swaszek, and Q. Yang; Adjunct Professors Aaron, Banerjee, Gerwitz, Middleton, Turtle, and Uht.

Electrical engineers work in all areas in which electrical phenomena are involved. These areas include communication systems, computers, control systems, quantum electronics, microelectronics, electro-optics, electro-acoustics, energy conversion, antennas and radio propagation, design of electronic devices, and bioengineering.

Since electrical instrumentation is at the heart of modern science and technology, electrical engineers are not only employed in the computer, electronics, communications, and power industries, but may also be found in diverse enterprises such as transportation, the chemical industry, large hospitals, medical schools, and government laboratories. By carefully selecting elective courses, the student should be able to enter any of these fields after graduation or be prepared for graduate study in engineering or physics.

The curriculum emphasizes the scientific basis of electrical engineering and the application of mathematical analysis to engineering problems. Work is required in

network and systems theory, atomic physics and solid state, electromagnetic theory, and electronics. Creative use of scientific principles in problems of engineering design is stressed, particularly in the senior year. Computer hardware and software development is a part of many electrical engineering courses.

Extensive laboratory work with electrical and optical devices serves to bridge the gap between mathematical analysis and the real world of "hardware." Separate undergraduate laboratories are available for electrical measurements, electronics, pulse and digital circuits, microprocessors, computer graphics, microwaves and quantum electronics, optics, materials, energy conversion, and systems. Selected students participate in advanced projects, including microelectronics, investigation of optical properties of solids, optical and radio propagation, acoustics, computers, robotics, and biological instrumentation.

Electrical engineering students should note that the four-year electrical engineering curriculum allows for three credits of completely free electives that do not have to satisfy any of the General Education requirements. Although the natural science requirement will be satisfied automatically by courses specified in the electrical engineering curriculum, it is recommended that students take some additional courses in mathematics or physics for which the prerequisites have been satisfied.

To transfer from University College to the College of Engineering in the electrical engineering program, students must have completed all science, mathematics, and engineering courses required during the first two semesters with a quality point average of 2.00 or better.

²⁷ Students can take the lab in either the fall or spring semester.

²⁸ Any course for which the prerequisite is met by CHM 101, GEL 103, or PHY 214, or any course in biochemistry, biology, botany, microbiology, or zoology. Course must be approved by an advisor.

²⁹ An engineering elective for this curriculum is one of the following engineering science courses: CHE 332, 437; CVE 220; IME 404, 412; MCE 323, 341, 354; and OCE 410.

Minimum Requirements

Humanities and Social Sciences (27 credits): see the General Education requirements for the College of Engineering, listed on page 72. Students should consult with their advisors regarding distribution of credits and approved courses.

Mathematics (20 credits): MTH 141, 142, 243, 362, 363; three credits MTH elective (215, any 300- to 500-level course except MTH 381).

Basic Sciences (19 credits): CHM 101, 102; PHY 203, 273, 204, 274, 205, 275, 306.

Computer Science (6 credits): CSC 201, 205.

Engineering Sciences and Design (56–57 credits): ELE 201, 202, 205, 212, 215, 313, 314, 322, 323, 331, 342, 443; one engineering elective (chosen from CHE 332, 347, 437; CVE 220; IME 404, 411, 412; MCE 323, 354, 458; or OCE 410); four electrical engineering design electives (chosen from ELE 401, 405, 408, 427, 432, 436, 437, 444, 447, 457, or 458; two of these courses must be chosen from ELE 408, 427, 444, 447, or 458).

Free Elective: 3 credits.

The major requires 131–133 credits.

Freshman Year

First semester: 15 credits

- 3 CHM 101 General Chemistry Lecture I
- 1 CHM 102 Laboratory for Chemistry 101
- 4 MTH 141 Introductory Calculus with Analytic Geometry
- 3 PHY 203 Elementary Physics I
- 1 PHY 273 Elementary Physics Laboratory I
- 3 General Education requirement

Second semester: 17 credits

- 3 ECN 201 Principles of Economics: Microeconomics
- 4 MTH 142 Intermediate Calculus with Analytic Geometry
- 3 PHY 204 Elementary Physics II
- 1 PHY 274 Elementary Physics Laboratory II

- 3 CSC 201 Introduction to Computing
- 3 General Education requirement

Sophomore Year

First semester: 17 credits

- 3 CSC 205 Computational Methods for Engineers and Scientists
- 3 MTH 243 Calculus for Functions of Several Variables
- 3 PHY 205 Elementary Physics III
- 1 PHY 275 Elementary Physics Laboratory III
- 3 ELE 201 Digital Circuits Design
- 1 ELE 202 Digital Circuits Design Laboratory
- 3 General Education requirement

Second semester: 17 credits

- 3 MTH 362 Advanced Engineering Mathematics I
- 3 PHY 306 Elementary Modern Physics
- 3 ELE 212 Linear Circuit Theory
- 2 ELE 215 Linear Circuits Laboratory
- 3 ELE 205 Microprocessor Laboratory
- 3 General Education requirement

lunior Year

First semester: 18 credits

- 3 MTH 363 Advanced Engineering Mathematics II
- 3 ELE 313 Linear Systems
- 3 ELE 322 Electromagnetic Fields I
- 3 ELE 331 Introduction to Solid State Devices
- 6 General Education requirements

Second semester: 15 credits

- 4 ELE 314 Linear Systems and Signals
- 4 ELE 323 Electromagnetic Fields II
- 4 ELE 342 Electronics I
- 3 General Education requirement

Senior Year30

Total credits for two semesters: 32-34

- 1 ELE 400 Introduction to Professional Practice
- 5 ELE 443 Electronics II
- 3 Mathematics elective³¹
- 3 Engineering elective³²
- 3 General Education requirement
- 3 Free elective
- 14–16 Electrical engineering design electives³³

Industrial and Manufacturing Engineering

The Department of Industrial and Manufacturing Engineering offers an ABET-accredited curriculum leading to the Bachelor of Science (B.S.) degree in industrial engineering. The Master of Science (M.S.) degree in manufacturing engineering and the Doctor of Philosphy (Ph.D.) in industrial and manufacturing engineering are also offered by the department.

Faculty: Professor Knight, chairperson. Professors G. Boothroyd and Dewhurst; Associate Professor Shao; Assistant Professor Sodhi; Adjunct Professors David Olson and Reynolds; Professor Emeritus Nichols.

The industrial and manufacturing engineering curriculum is designed to provide significant strength in mathematics, basic science, and engineering science, together with a carefully coordinated set of courses of particular importance to the professional industrial or manufacturing engineer. Mathematical modeling of production systems and fundamental treatments of important manufacturing processes and assembly are included. Robotics, computer-aided manufacturing, and product design for manufacturability and assembly are areas that receive considerable attention.

Students are amply prepared to pursue careers in industrial or manufacturing engineering—areas that are becoming increasingly important in efforts to improve industrial productivity in the United States.

The curriculum also provides an excellent background for further formal study at an advanced level.

The major requires 129 credits.

Freshman Year

First semester: 15 credits

- 3 CHM 101 General Chemistry Lecture I
- 1 CHM 102 Laboratory for Chemistry 101
- 3 ECN 201 Principles of Economics: Microeconomics
- 1 EGR 102 Basic Graphics
- 4 MTH 141 Introductory Calculus with Analytic Geometry
- 3 General Education requirement

Second semester: 17 credits

- 3 ECN 202 Principles of Economics: Macroeconomics
- 3 MCE 162 Statics
- 4 MTH 142 Intermediate Calculus with Analytic Geometry
- 3 PHY 203 Elementary Physics I or PHY 213 Elementary Physics I
- 1 PHY 273 Elementary Physics Laboratory I or PHY 285 Physics Laboratory I
- 3 General Education requirement

Sophomore Year First semester: 16 credits

- 3 IME 220 Introduction to Industrial Engineering
- 3 MCE 263 Dynamics
- 3 MTH 243 Calculus for Functions of Several Variables
- 3 PHY 204 Elementary Physics II or PHY 214 Elementary Physics II
- 1 PHY 274 Elementary Physics Laboratory II or PHY 286 Physics Laboratory II
- 3 General Education requirement

Second semester: 18 credits

- 3 ACC 201 Elementary Accounting I
- 3 CVE 220 Mechanics of Materials
- 3 ELE 220 Passive and Active Circuits
- 3 IME 240 Manufacturing Processes
- 3 IME 325 Computer Solutions in Industrial and Manufacturing Engineering
- 3 MTH 362 Advanced Engineering Mathematics I

Junior Year

First semester: 18 credits

- 3 CHE 333 Engineering Materials or CHE 437 Materials Engineering
- 3 IME 404 Engineering Economy
- 3 IME 411 Probability for Engineers
- 3 IME 432 Operations Research: Deterministic Models
- 3 MCE 341 Thermodynamics
- 3 General Education requirement

Second semester: 15 credits

- 3 IME 412 Statistics for Engineers
- 3 IME 433 Operations Research: Stochastic Models
- 3 IME 443 Machining and Machine Tools

- 3 IME 451 Industrial Engineering Systems
- 3 Professional elective

Senior Year

First semester: 15 credits

- 3 IME 444 Assembly and Handling Automation
- 3 IME 449 Product Design for Manufacturability
- 3 Professional elective
- 6 General Education requirements

Second semester: 15 credits

- 3 IME 446 Metal Deformation Processes
- 3 Approved science elective³⁴
- 3 Professional elective
- 3 Free elective
- 3 General Education requirement

General Education indicated in several places above refers to one of the electives in the University's General Education program, required in all curriculums leading to a bachelor's degree.

Materials Engineering

The Department of Chemical Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in materials engineering.

Faculty: Chemical Engineering faculty; Professor Rockett, coordinator.

Graduates will be prepared to continue studies on the postbaccalaureate level in materials engineering, materials science, or chemical engineering, or to enter employment in industries and government agencies where production and research are underway in the development, processing, and marketing of products involving traditional or new uses of metals, alloys, ceramics, composites, polymers, and semiconductors. Products range from large turbines to computer chips. Employment opportunities include basic research, applied research and testing, product design, troubleshooting, pollution control, process supervision, government regulation, economic analysis, quality control, management, and engineering sales.

The materials engineering program begins with General Education requirements and mathematics, chemistry, and physics courses common to many of the other engineering programs. In the sophomore and junior years, many traditional engineering science areas are treated, along with basic courses in materials science and additional chemistry courses. In the final year, the application and synthesis of topics previously studied are incorporated into formal courses and project courses. Considerable leeway is allowed at this level in the choice of project topics and courses in specialized areas of materials engineering.

The major requires 132 credits.

Freshman Year First semester: 16 credits

- 5 CHM 191 General Chemistry
- 1 CHE 101 Foundations of Chemical Engineering
- 4 MTH 141 Introductory Calculus with Analytic Geometry
- 6 General Education requirements

Second semester: 17 credits

- 5 CHM 192 General Chemistry
- 1 CHE 102 Introduction to Chemical Engineering
- 4 MTH 142 Intermediate Calculus with Analytic Geometry
- 3 PHY 213 Elementary Physics I

³⁰ See your advisor for help in preparing a suitable senior-year program.

³¹ A mathematics elective is MTH 215 or any 300to 500-level mathematics course except MTH 381. MTH 451 is recommended as a mathematics elective.

³² An engineering elective for this curriculum is one of the following engineering science courses: CHE 332, 347; CVE 220; IME 404, 411, 412; MCE 323, 341, 354; and OCE 410.

³³ Electrical engineering design electives may be chosen from any four of the following courses: ELE 401, 405, 408, 427, 432, 436, 437, 444, 447, 457, or 458. However, two of the courses must be chosen from ELE 408, 427, 444, 447, or 458.

Any course for which the prerequisite is met by CHM 101, including PHY 205, 223, and 275; any physics course at or above the 300 level; or any course in astronomy, biochemistry, biology, botany, geology, microbiology, or zoology. Any other course must be approved by an advisor.

- 1 PHY 285 Physics Laboratory I
- 3 ECN 201 Principles of Economics: Microeconomics

Sophomore Year First semester: 16 credits

- 3 CHE 212 Chemical Process Calculations
- 3 CHM 227 Organic Chemistry Lecture I
- 3 MTH 243 Calculus for Functions of Several Variables
- 3 PHY 214 Elementary Physics II
- 1 PHY 286 Physics Laboratory
- 3 MCE 162 Statics

Second semester: 15 credits

- 3 CHE 272 Introduction to Chemical Engineering
- 3 CHE 332 Physical Metallurgy
- 3 CHM 228 Organic Chemistry Lecture II
- 3 CVE 220 Mechanics of Materials
- 3 MTH 244 Differential Equations

Junior Year

First semester: 18 credits

- 3 CHE 313 Chemical Engineering Thermodynamics
- 3 CHE 347 Transfer Operations I
- 3 CHE 437 Materials Engineering
- 3 CHM 431 Physical Chemistry
- 3 MTH 215 Introduction to Linear Algebra
- 3 General Education requirement

Second semester: 17 credits

- 3 CHE 314 Chemical Engineering Thermodynamics
- 2 CHE 322 Chemical Engineering Microlaboratory
- 3 CHE 348 Transfer Operations II
- 3 ELE 220 Passive and Active Circuits
- 6 General Education requirements

Senior Year

First semester: 18 credits

- 3 CHE 351 Plant Design and Economics
- 3 CHE 439 Nondestructive Evaluation of Materials
- 3 IME 411 Probability for Engineers
- 3 Engineering science elective (Materials)
- 3 Design elective (Materials)
- 3 General Education requirement

Second semester: 15 credits

- CHE 492 Special Problems (Design, Materials)
- 3 CHE 534 Corrosion and Corrosion Control
- 3 Engineering science elective (Materials)
- 6 General Education requirements

Mechanical Engineering and Applied Mechanics

The Department of Mechanical Engineering and Applied Mechanics offers a curriculum leading to the Bachelor of Science (B.S.) degree in mechanical engineering and, in cooperation with the Department of Ocean Engineering, offers a curriculum leading to the Bachelor of Science (B.S.) degree in mechanical engineering with an ocean engineering option, both accredited by the Accreditation Board for Engineering and Technology. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in mechanical engineering and applied mechanics are also offered by the department.

Faculty: Professor Sadd, chairperson. Professors Datseris, Faghri, Ferrante, Ghonem, T. Kim, Lessmann, W. Palm, Shukla, and F. White; Associate Professors Jouaneh, Olson, and Taggart; Assistant Professor Zhang; Adjunct Professors Hubbell, Patton, and Tucker.

This curriculum provides a thorough and well-rounded foundation in basic science, mathematics, engineering science, and general education to prepare the graduate to enter a professional engineering career. The curriculum is also excellent preparation for graduate school. The program is strong in providing a background in design, solid and fluid mechanics, systems engineering, and the thermal sciences, including energy and energy transfer. Computer applications are stressed throughout the curriculum. All undergraduates are invited and encouraged to join the Student Section of the American Society of Mechanical Engineers, which sponsors industrial plant visits, special lectures, and other activities.

The work in the first two years consists of basic courses in science (mathematics, physics, chemistry), applied science (mechanics, electricity and magnetism, computer science, theory of mechanisms), and General Education requirements (humanities, social sciences, English communication). All mechanical engineering students must have credit for CSC 200, or the equivalent, before taking MCE courses at the 200 or higher level.

The junior year concentrates on fundamental courses in mechanical engineering (thermodynamics, fluid mechanics, systems engineering, engineering analysis), materials sciences, and electronic devices. Further General Education studies are also covered.

The senior year in mechanical engineering includes machine design, heat transfer, manufacturing processes, computer-aided design, and a wide variety of professional electives such as mechanical control systems, advanced fluid mechanics, advanced mechanics of materials, microprocessor applications, internal combustion engines, alternate energy systems including solar and wind energy, power plants, thermal environmental engineering, vibrations, finite element method, and experimental stress analysis. The program also includes a pair of laboratory courses, which introduce experimental techniques and provide practical experience with the engineering phenomena covered in the classroom.

A considerable amount of computer techniques is integrated throughout the curriculum. Computational facilities in the department include VAX and SUN workstations and PC and Macintosh personal computers. Access to the Engineering Computer Laboratory and the University's Academic Computer Center is also available. A new technology computer classroom, to be completed at the end of 1995, will provide state-of-the-art hardware and software for simulation, design, and product development.

Students desiring an undergraduate specialization in ocean engineering may choose the program in mechanical engineering with an ocean engineering option. Students enrolled in this option follow the

program of study for mechanical engineering during the freshman and sophomore years. The curriculum for the junior and senior years is listed separately.

To receive the Bachelor of Science degree in mechanical engineering, the student must satisfactorily complete all the courses in the following curriculum.

The major requires 137 credits.

Freshman Year First semester: 17 credits

- 3 CHM 101 General Chemistry Lecture I
- 1 CHM 102 Laboratory for Chemistry 101
- 4 MTH 141 Introductory Calculus with Analytic Geometry
- 3 ECN 201 Principles of Economics: Microeconomics
- 3 CSC 200 Introduction to Computer Programming for Engineers
- 3 General Education requirement

Second semester: 17 credits

- 4 MTH 142 Intermediate Calculus with Analytic Geometry
- 3 MCE 162 Statics
- 3 PHY 213 Elementary Physics I
- 1 PHY 285 Physics Laboratory I
- 6 General Education requirements

Sophomore Year First semester: 16 credits

- 3 CVE 220 Mechanics of Materials
- 3 MTH 243 Calculus for Functions of Several Variables
- 3 MCE 263 Dynamics
- 3 PHY 214 Elementary Physics II
- 1 PHY 286 Physics Laboratory II
- 3 MCE 220 Computer Graphics in Mechanical Engineering

Second semester: 18 credits

- 3 ELE 220 Passive and Active Circuits
- 3 MTH 244 Differential Equations
- 3 MCE 323 Kinematics
- 3 PHY 341 Introductory Modern Physics
- 6 General Education requirements

Junior Year

First semester: 18 credits

- 3 CHE 333 Engineering Materials
- 3 ELE 221 Electronic Instruments and Electromechanical Devices

- 3 MCE 341 Fundamentals of Thermodynamics
- 3 MCE 372 Engineering Analysis I
- 6 General Education requirements

Second semester: 15 credits

- 3 MCE 317 Mechanical Engineering Experimentation I
- 3 MCE 342 Mechanical Engineering Thermodynamics
- 3 MCE 354 Fluid Mechanics
- 3 MCE 366 Introduction to Systems Engineering
- 3 MCE 373 Engineering Analysis II

Senior Year

First semester: 18 credits

- 3 IME 340 Materials Processing and Metrology I
- 3 MCE 318 Mechanical Engineering Experimentation II
- 3 MCE 423 Design of Machine Elements
- 3 MCE 448 Heat and Mass Transfer
- 6 Professional electives35

Second semester: 18 credits

- 3 MCE 429 Comprehensive Design
- 3 MCE 430 Computer-Aided Design
- 6 Professional electives35
- 3 Free elective
- 3 General Education requirement

Mechanical Engineering with an Ocean Engineering Option. Students enrolled in this curriculum will follow the program of study for mechanical engineering during the freshman and sophomore years. The curriculum for the junior and senior years follows.

This major requires 140 credits.

Junior Year

First semester: 18 credits

- 3 CHE 333 Engineering Materials
- 3 ELE 221 Electronic Instruments and Electromechanical Devices
- 3 MCE 341 Fundamentals of Thermodynamics
- 3 MCE 372 Engineering Analysis I
- 3 OCG 401 General Oceanography
- 3 General Education requirement

Second semester: 18 credits

- 3 MCE 317 Mechanical Engineering Experimentation I
- 3 MCE 342 Mechanical Engineering Thermodynamics
- 3 MCE 354 Fluid Mechanics
- 3 MCE 366 Introduction to Systems Engineering
- 3 MCE 373 Engineering Analysis II
- 3 General Education requirement

Senior Year

First semester: 18 credits

- 3 IME 340 Materials Processing and Metrology I
- 3 OCE 410 Basic Ocean Measurements
- 3 MCE 423 Design of Machine Elements
- 3 MCE 448 Heat and Mass Transfer
- 3 OCE elective³⁶
- 3 General Education requirement

Second semester: 18 credits

- 3 MCE 429 Comprehensive Design
- 3 MCE 430 Computer-Aided Design
- 3 OCE 307 Coastal Engineering Design
- 3 OCE 471 Underwater Acoustics and Data Analysis
- 3 Professional elective³⁷
- 3 Free elective

Ocean Engineering

The Department of Ocean Engineering offers a curriculum leading to the Bachelor of Science (B.S.) degree in ocean engineering. The department is nationally and internationally recognized as one of the leaders in ocean engineering. The B.S. program is designed to meet criteria for ac-

³⁵ The requirement for professional electives must be satisfied by a minimum of three three-credit elective courses in mechanical engineering. The fourth course may be a 300-, 400-, or 500-level course offered by: the College of Engineering (except OCE 346 and 347); or the Departments of Chemistry, Computer Science and Statistics, or Physics; or the Department of Mathematics (one 400- or 500-level course).

³⁶ One course must be selected from OCE 411, 495, 510, 512, 522, 534, or 561.

³⁷ The professional elective requirement may be satisfied by any 400-level mechanical engineering course.

creditation by the Accreditation Board for Engineering and Technology and is open to qualified students under the New England Regional Student Program. The Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees are also offered by the department.

Faculty: Professor Spaulding, chairperson.
Professors Silva, Stepanishen, and Tyce;
Associate Professors Grilli and Hu; Adjunct
Professors Methot, Shonting, and Uhlman;
Professors Emeriti T. Kowalski, Middleton,
and Sheets.

This curriculum provides a basic ocean engineering program that will prepare students for direct entry into a professional career or for continued study toward a graduate degree. The curriculum gives students a firm footing in engineering fundamentals. The required ocean engineering courses begin at the freshman level and include laboratory, analysis, and design courses. The total design component must include at least 17 credits. There is a strong emphasis on the application of scientific principles in the ocean environment gained through laboratory courses. Experiments covering several basic areas are employed and provide an integrated approach to investigations into ocean phenomena and processes. Students are involved in the planning and execution of experiments, including collection and analysis of data and the reporting of results. This hands-on experience provides graduates with an understanding of ocean engineering activities in scientific and industrial fields. Three ocean engineering professional elective courses are also reguired. The program is broad-based and exposes students to the following topics: ocean instrumentation and data analysis, underwater and subbottom acoustics, marine hydrodynamics, coastal and nearshore processes, marine geomechanics, coastal and offshore structures, and corrosion.

To ensure that each student gains an in-depth knowledge of one of the ocean engineering disciplines, the curriculum requires an emphasis in one of five approved

sequences of courses, selected among the following areas of specialization: hydrodynamics, structures, geomechanics, acoustics, instrumentation, and data analysis. The emphasis may result in a minor in that department. An Ocean Systems Design Project course in the senior year integrates previously obtained knowledge in a comprehensive design project. This experience may be obtained through an on-campus course, by participating in an ongoing research project, or through an off-campus summer internship in an ocean-oriented private company or government laboratory. The internship allows interested students to take advantage of the many opportunities available in the region.

The Department of Ocean Engineering has its headquarters in the Sheets Building and has laboratory facilities in the Middleton Building, both on the Narragansett Bay Campus. These buildings house most of the department's experimental facilities. Computational facilities include computer and terminal rooms on both campuses. Both IBM and Macintosh computers are networked, and workstations are connected to the Engineering Computer Laboratory and the Academic Computer Center.

Extensive laboratory facilities are available. The department acquired an 80-foot research vessel equipped with a fully integrated side-scan sonar mapping system. This vessel, the CT-1, is used for both laboratory courses and research. A 100-foot tow tank and a large acoustics tank are located on the Bay Campus, as well as an electronics shop, a diving locker, a machine shop, a corrosion/materials laboratory, and the Marine Geomechanics Laboratory.

The major requires 134-135 credits.

Freshman Year

First semester: 18 credits

- 3 CHM 101 General Chemistry Lecture I
- 1 CHM 102 Laboratory for Chemistry 101
- 4 MTH 141 Introductory Calculus with Analytic Geometry
- 3 ECN 201 Principles of Economics: Microeconomics

- 3 CSC 200 Introduction to Computer Programming for Engineers
- 4 GEL 103 Physical Geology

Second semester: 16 credits

- 4 MTH 142 Intermediate Calculus with Analytic Geometry
- 3 PHY 213 Elementary Physics I
- 1 PHY 285 Physics Laboratory I
- 1 OCE 101 Introduction to Ocean Engineering
- 3 CHM 112 General Chemistry Lecture II
- 1 CHM 114 Laboratory for Chemistry 112
- 3 General Education requirement

Sophomore Year

First semester: 16 credits

- 3 MCE 162 Statics
- 3 MTH 243 Calculus for Functions of Several Variables
- 3 PHY 214 Elementary Physics II
- 1 PHY 286 Physics Laboratory II
- 6 General Education requirements

Second semester: 16 credits

- 3 CVE 220 Mechanics of Materials
- 3 MTH 244 Differential Equations
- 3 ELE 220 Passive and Active Circuits
- 3 OCG 401 General Oceanography
- 1 OCE 215 Ocean Engineering Seminar
- 3 MCE 263 Dynamics

Junior Year

First semester: 18-19 credits

- 3 CHE 333 Engineering Materials or CVE 381 Geotechnical Engineering (4 credits)
- 3 MCE 341 Fundamentals of Thermodynamics or CHE 313 Chemical Engineering Thermodynamics I
- 3 MCE 372 Engineering Analysis I or CVE 352 Structural Analysis I
- 3 MCE 354 Fluid Mechanics
- 3 OCE 410 Basic Ocean Measurements
- 3 General Education requirement

Second semester: 18 credits

- 3 IME 404 Engineering Economy
- 3 OCE 471 Underwater Acoustics and Data Analysis
- 3 OCE 307 Coastal Engineering Design
- 3 OCE 411 Basic Coastal Measurement

- 3 Professional elective (Group A)³⁸
- 3 General Education requirement

Senior Year

First semester: 17 credits

- 1 OCE 416 Ocean Engineering Seminar
- 4 OCE 495 Ocean Systems Design Project³⁹
- 6 Professional electives (Group A)38
- 3 Professional elective (Group B)⁴⁰
- 3 General Education requirement

Second semester: 15 credits

- 3 MCE 366 Introduction to Systems Engineering or CVE 495 Civil and Environmental Engineering Systems
- 3 Professional elective (Group B)⁴⁰
- 3 Free elective
- 6 General Education requirements

THE COLLEGE OF HUMAN SCIENCE AND SERVICES

Barbara Brittingham, *Dean* Leo E. O'Donnell, *Associate Dean* Milton Butts, Jr., *Assistant Dean*

The College of Human Science and Services is a people-oriented college designed to focus on the human and nonhuman resources needed to help individuals and groups solve human problems encountered in contemporary society. Programs in the college prepare students for a variety of professions in three basic areas: teacher education, health-related fields, and fields that have evolved from the University's historic land-grant mission in home economics. These programs include both formal and informal experiences with people in a wide variety of public service settings which enable students to develop the competencies needed in the emerging field of human services. The teacher education programs offered through the College of Human Science and Services are outlined in the following departmental descriptions. For more information on teacher education programs, see pages 27-28.

The degrees offered by the college include: 1) a Bachelor of Science degree with majors in communicative disorders; consumer affairs; dental hygiene; elementary and secondary education; human development and family studies; human science and services; physical education; textiles, fashion merchandising, and design; and textile marketing; and 2) a Bachelor of Science degree in home economics with a major in home economics.

Institute of Human Science and Services. The Institute of Human Science and Services, the research and service branch of the college, promotes these activities in human service areas across all departments of the college. The institute conducts research in education and educational testing, lifelong learning, human transition, child development, communicative disorders, special populations, gerontology, and exercise physiology. Faculty conducting institute research also teach within the various departments of the college.

The college sponsors a number of organizations and activities that provide special opportunities for students:

URI Clearinghouse for Volunteers is a service that matches prospective volunteers with positions in Rhode Island's human service agencies, giving students opportunities to explore career options and provide needed service.

Cardiopulmonary Laboratory is equipped with the latest means of measuring physical activity and its stresses and effects. It sponsors programs for adult fitness and conducts research programs related to fitness, sport, and nutrition.

Child Development Center is a modern facility that provides day care and preschool programs; it offers opportunities for undergraduate students to observe young children and to learn to work with them.

Microcomputer Laboratory contains a variety of up-to-date microcomputers with software designed for use in elementary and secondary classrooms.

Historic Textile and Costume Collection is a teaching and research collection of over 16,000 artifacts with an emphasis on historic New England clothing and textiles. Objects range from archaeological textiles to 20th-century designer garments.

Physical Therapy Clinic offers physical therapy services to the community and provides a setting for clinical education and research for students in the physical therapy program.

Speech and Hearing Clinic provides speech and audiology testing and therapy services to persons throughout the community, as well as to URI faculty, staff, students, and their families. It also provides observational, clinical, and research support for the Department of Communicative Disorders.

Dental Hygiene Clinic offers preventive services to persons 18 years or older. Services include dental prophylaxis, X-ray films, patient education, and fluoride treatments.

Division of Interdisciplinary Studies. This division provides an environment in which faculty and students can bring together interdisciplinary programs and courses of study in human science and services. The division functions to promote and encourage the creation, implementation, and evaluation of interdisciplinary courses and programs of study taught by faculty from two or more departments within the University. In addition, the division assumes responsibility for the development, review, and implementation of programs of study that draw significantly on two or more human science and services departments.

³⁸ The requirement for professional electives in Group A must be satisfied by a minimum of two approved three-credit elective courses at the 300, 400, or 500 level in engineering. One three-credit elective must be a 400-level mathematics course.

³⁹ An approved off-campus experience between the junior and senior years can be substituted for OCE 495.

⁴⁰ The requirement for professional electives in Group B must be satisfied by a minimum of two approved three-credit courses in ocean engineering.

The division maintains administrative responsibility for the following programs: Consumer Affairs (see page 85); Gerontology (see page 31); Home Economics (see page 87); Human Science and Services (see page 88); and Special Populations (see page 32).

Minors: Interdisciplinary Nondegree Programs. Students can declare a minor, which will appear on their transcripts as a category separate from their major. Credits may be drawn from any cohesive combination of courses. A minor may be defined as: 1) the completion of 18 or more credits in any of the minors that have been proposed by one or more departments and approved by the Curriculum Affairs Committee, Faculty Senate, and President: 2) the completion of 18 or more credits within a curriculum other than the student's major; or 3) the completion of 18 or more credits of related studies offered by more than one department and approved by a member of the faculty competent in the area and the Dean of the college. At least 12 of the 18 credits must be at the 200 level or above. Elective courses and courses in General Education may be used for the minor. No course may be used to apply to both the major and a minor field of study. A minimum average of 2.00 must be earned in the courses in the minor. Courses in the minor may not be taken under the pass-fail option. It is the responsibility of the student to declare and obtain approval for a minor no later than the end of the add period at the start of the senior year.

Faculty

Communicative Disorders: Associate Professor J. Singer, chairperson. Professors Culatta and Grubman-Black; Associate Professor Preece; Assistant Professor Harris; Clinical Assistant Professor Regan; Adjunct Assistant Professor R. Singer; Clinical Coordinator Connors.

Dental Hygiene: Associate Professor B. Brown, director. Assistant Professor Saunders; Clinical Instructors Allen,

Aschaffenburg, Barry, Beauregard, Bhattacharya, Calitri, Carlotti, Chapman, Feldman, George, Hogan, Kaufman, Kershaw, Mullane, Nager, Pregnolato, Renz, Schwab, Skoly, Wigand, and Woodward.

Education: Professor T. Kellogg, chairperson. Professors Brittingham, Croasdale, Long, MacMillan, McKinney, Purnell, Russo, and G. Willis; Associate Professors A. Allen, Boulmetis, Byrd, R. Nelson, Soderberg, R. Sullivan, Trostle, and Young; Assistant Professors Barton, Hicks, and Valdez; Adjunct Professors Knott and Tierney.

Human Development and Family Studies: Associate Professor Caruso, chairperson. Professors P. Clark, S. Cohen, P. Maynard, and Rae; Associate Professors Adams, Anderson, Horm-Wingerd, Richmond, and Schaffran; Assistant Professors Blood, Kalymun, Noring, Rolley, K. Schroeder, and Xiao; Adjunct Professor Guthrie.

Physical Education and Health: Associate Professor O'Leary and Associate Professor Seleen, co-chairpersons. Professors G. Cohen, Manfredi, Nedwidek, and Sonstroem; Associate Professors Agostinucci, Blanpied, O'Donnell, Polidoro, and Rowinski; Assistant Professors Lamont, J.S. Norris, Robinson, and Roush; Special Instructor Marsden; Clinical Coordinator Congdon; Clinical Assistant Professor Winter.

Textiles, Fashion Merchandising, and Design: Professor Welters, chairperson. Associate Professors Bide, Higa, Helms, and Ordonez; Assistant Professor Harps-Logan; Adjunct Professor Emery; Instructor Perry; Curator Kaye.

Division of Interdisciplinary Studies: Consumer Affairs—Assistant Professor Noring, program head; Gerontology—Professor Clark, acting director; Human Science and Services—Professor McKinney, program head; Special Populations—Associate Professor O'Donnell, acting program head; Urban Affairs—Professor Feld, director.

Curriculum Requirements

General Education Requirements. All students pursuing a bachelor's degree in the College of Human Science and Services are required to develop a 39-credit program in General Education within the framework listed below. For a complete description of the General Education requirements, see pages 29–30.

Individual programs may require specific courses for their area.

English Communication (6 credits): a minimum of three credits in written communication from courses in Group Cw; a minimum of three credits in oral communication from COM 101, 103.

Fine Arts and Literature (6 credits)
Foreign Language and Culture (6 credits)
Letters (6 credits)

Mathematics (3 credits)
Natural Sciences (6 credits)

Social Sciences (6 credits): a minimum of three credits from anthropology, psychology, or sociology courses approved for General Education.

Total: 39 credits.

Students in the program in elementary education must follow the General Education requirements of the College of Arts and Sciences.

Field Work. Many of the academic programs in the College of Human Science and Services require a supervised field work experience as part of the degree requirements. This experience is designed to provide students with the opportunity to apply classroom knowledge in a careerrelated setting. Placements are made in a wide variety of agencies such as public schools, health care facilities, day care centers, and other human service settings. Satisfactory completion of a required field experience depends on achievement of basic competencies established by the academic department in cooperation with the agency. The University supervisor is responsible for determining whether or not

the student has attained the required competencies and, in some cases, may extend the time required for the experience until the student's performance is satisfactory. If in the opinion of the University supervisor the performance of the student is unsatisfactory, and particularly if client/patient safety is at risk, the student may be removed from the field experience prior to the end of the semester or term.

Graduation. It is the responsibility of the student to file an Intent to Graduate form and a curriculum work sheet approved by the advisor in the Dean's Office. The deadline is September 15 for May graduation, April 5 for August graduation, and May 5 for December graduation.

Course Load. Approval of the advisor and the Dean is needed for a schedule of more than 19 credits per semester.

Repeating Courses for Credit. Unless otherwise stated in the course description, a course cannot be repeated for credit. Credit can be counted only once toward the total credits required for graduation. Repeating courses in which a grade of C or better was earned requires approval of the student's academic dean; students may need to take such courses on a pass-fail basis.

Transfer Students. Transfer students should be advised that admission to some programs in the College of Human Science and Services requires meeting certain prerequisites or separate admission criteria. Teacher education programs in the Department of Education, Department of Human Development and Family Studies, and the Department of Physical Education and Health have specific admission criteria and generally require that a matriculated student complete at least one semester of work at the University of Rhode Island before applying for admission. Transfer students may be admitted to the University, but are not admitted directly into these programs.

The Plan for Early Contingent Admission to the Master of Science Degree Program in Physical Therapy requires careful

and timely course planning typically beginning with the freshman year at the University. It is unlikely that transfer students would have the appropriate sequence of courses, including the prerequisites, that would allow them to take advantage of these options.

Students interested in any of the above programs should refer to the specific program descriptions on the following pages and consult the department for additional information.

Communicative Disorders

This curriculum leads to a Bachelor of Science (B.S.) degree in communicative disorders. In addition to General Education requirements and appropriate free electives, a major of 34 semester hours in communicative disorders includes 25 semester hours of required courses and nine semester hours of professional electives.

The required courses are CMD 260, 261, 372, 373, 374, 375, 376, and 465. The remaining nine credits (three courses) must be selected from the four areas listed below with a limit of one course in a given area:

Area A (0–3 credits). Normal Human Development and Adjustment: HDF 200, 201, 450; PSY 232, 235.

Area B (0–3 credits). *Special Populations:* CMD 475 (2 credits); HDF 220; PSY 254, 442.

Area C (0–3 credits). *Supportive Disciplines:* COM 220; EDC 312, 424; HSS 320; LIN 201; PSY 300, 384, 386; STA 220.

Area D (0–3 credits). Honors Work, Individual Research, or Special Problems within the department: CMD 391, 392, 491, 492.

With careful early planning, students can use free electives to achieve a double major or to explore special-interest areas in depth. Students should anticipate the necessity for graduate study in speechlanguage pathology or audiology. The typical minimum entry requirement for graduate study is a quality point average of 3.00.

A total of 120 credits is required for graduation.

Accelerated Bachelor's-Master's Degree Program in Speech-Language Pathology or Audiology. URI sixth-semester students pursuing a Bachelor of Science (B.S.) degree in communicative disorders with 25 credits of electives remaining may apply for acceptance into an accelerated master's degree program in either speech-language pathology or audiology. Students accepted into this program follow a specified sequence of graduate-level course work and clinical practicum during their senior year, and complete the master's degree in one additional year of full-time graduate study. A cumulative quality point average of 3.00 overall and 3.20 in the major is required, with MAT or GRE scores in at least the 50th percentile. Three letters of recommendation (two from URI communicative disorders faculty) are also needed.

This accelerated program is not available to non-URI undergraduates or to parttime graduate students.

Students in this program are required to take a minimum of 25 specified course work and practicum credits (16 credits at the 500 level) in the senior year, and 30 credits at the 500 level in the fifth year. Requirements for the M.A. and M.S. degrees in speech-language pathology or audiology are outlined in the section "Graduate Programs."

Consumer Affairs

This curriculum leads to the Bachelor of Science (B.S.) degree in consumer affairs. The interdisciplinary program provides students with course work and experience that will prepare them for entry-level positions in the areas of housing management, personal financial planning, and consumer relations and public policy. Course work in consumer affairs is combined with selected courses in business, economics, political science, psychology, and related areas. Field experience obtained from internships is an important component of the program.

Students who wish to be accepted into the degree program in consumer affairs

must have completed and earned at least a combined 2.00 quality point average in the following courses: CNS 220; ECN 201, 202; and MTH 107, 108, 111, or 131.

The following courses are required of all students: one WRT course; COM 101; MTH 107, 108, 111, or 131; PSY 113; SOC 100 or 102; ECN 201, 202; PSC 113; PHL 217, MKT 321, MGT 380, or PSC 368; PSC 288; CNS 422, MKT 415, or STA 412; STA 308 or 409; CSC 101 and PHL 101. Some of these courses may be used to help fulfill the General Education requirements.

The following consumer affairs courses are required: CNS 210, 220, 320, 340, 420, as well as BSL 333, ECN 302 or 337, and MKT 311; and a field experience (minimum of three credits of CNS 477 or 478, or UYA 301 or 302).

Students are required to take an additional 18 credits from one of the three following professional concentrations.

Consumer Relations and Public Policy: three required courses are BUS 450, CNS 350 and 457. Students may select the other three courses from COM 210; ECN 337, 403; FSN 150, 207; JOR 110, 200, 340; MKT 405; PSC 304, 368; REN 341; STA 412; and TMD 103.

Housing Management: CNS 440 is required. Students must select five courses from the following: CNS 342; CPL 410, 540; ECN 402; FIN 341; HDF 220 or HSS 222; HDF 440.

Personal Financial Planning: required courses are ACC 300X or 201; CNS 321, 415; FIN 301; HDF 450 or an equivalent skills course. The remaining course can be selected from INS 301, 425; FIN 322, 341.

Students take 12 credits of free electives. A total of 120 credits is required for graduation.

Dental Hygiene

The Department of Dental Hygiene offers a program leading to the Bachelor of Science (B.S.) degree. The program is accredited by the Commission on Dental Accreditation.

Admission to the two-year clinical dental hygiene program, which offered a Certificate in Dental Hygiene, has been suspended.

The bachelor's degree program in dental hygiene is designed for dental hygienists who have earned a certificate or an Associate in Science degree in dental hygiene from another institution and who are interested in earning a Bachelor of Science degree within the dental hygiene discipline. The main objective of this program is to provide educational experiences that will enhance the professional hygienist's selfimage and self-enrichment as well as expand career options. Graduates of this program are prepared to assume positions of responsibility and leadership in a variety of health care, community, and educational settinas.

Candidates for the Bachelor of Science degree are required to take the following: CHM 101, 102 or 103, 105 (4), 124 (3), 126 (1); COM 101 (3); DHY 350, 462, 464 (3); EDC 312 (3); FSN 207 (3); MIC 201 (4); PCL 221 (2); PSY 113 (3), 232 (3); SOC 100 (3); WRT 101 (3); ZOO 121 (4), 242 (3), 244 (1).

Students must also fulfill the General Education requirements.

Students may pursue the Bachelor of Science degree on either a full-time or part-time basis. In addition to University admission requirements, applicants must have passed the National Dental Hygiene Examination.

Education

The curriculum in secondary education leads to the Bachelor of Science (B.S.) degree, the curriculum in elementary education to the Bachelor of Arts (B.A.) degree. Students wishing to enroll in the early childhood education program must major in human development and family studies and seek admission to the teacher education component of this program, as outlined below. The Master of Arts (M.A.) degree programs in education are described in the section "Graduate Programs."

The curriculums offer a balanced program of academic preparation and profes-

sional training. The required professional courses contribute directly to understanding the teacher's role in society and to the development of teaching skills.

Successful completion of the early childhood education program leads to an initial teaching certificate for the primary grades (N–2), while completion of the elementary education program leads to an initial teaching certificate for grades 1–6. The secondary education program leads to an initial teaching certificate for a specific subject area in grades 7–12.

Admission Requirements. Students interested in undergraduate teacher education programs are required to apply for admission to the Office of Teacher Education. Applications for admission to teacher education programs are normally submitted during the sophomore year. Applications will be reviewed by a departmental screening committee based on the following criteria: 1) recommendations from faculty and others who have knowledge of the candidate's experience or interest in working in education; 2) a writing sample expressing career goals, experience in working with children, and expectations as a teacher; 3) scores on a standardized test(s) of basic skills; 4) the student's academic record, including a cumulative quality point average of 2.50 or better and grades in the academic major or specialization averaging 2.50 or better.

Due to limited staff and facilities, admission to the programs in early childhood education and elementary education is limited. Some applicants meeting the minimum requirements may not be admitted due to limited space. Students should check with the department or their University College advisor as early as possible for additional information.

Students denied admission can petition the department for a review of the decision. In such cases, the departmental screening committee meets to consider the appeal. Only exceptional circumstances will lead the appeal committee to override the academic record criteria (2.50 cumulative quality point average and 2.50 in the academic major or specialization).

Applicants who fail to gain admission should seek counsel from an appropriate advisor. Students can reapply for admission but should understand that this may delay their anticipated graduation date.

For courses required for early childhood education, see page 88. For more information on teacher education programs, see pages 33–34. For graduate teacher education programs, see pages 121–122, 148.

Students entering the University in the fall of 1993 and thereafter who are subsequently admitted to the program in elementary education will be required to complete a Bachelor of Arts degree. Students must select a major in the College of Arts and Sciences in addition to the major in elementary education and must fulfill the General Education requirements of the College of Arts and Sciences. See program requirements for the College of Arts and Sciences on pages 41–64. Students should be aware that this program will normally require four and a half years to complete.

The professional sequence courses required for elementary education are: EDC 250, 312, 102 or 360, 424, 452, 453, 454, 455, 456, 457, 458, 459 and EDC 425 or HDF 302. These courses are taken prior to student teaching. EDC 484, 485, and 460 make up the student teaching experience. The following are also required and can be taken as part of the General Education requirements: COM 101, GEG 103 or 104, HIS 142, PSY 113, 232, WRT 101, and a one-credit health education course or equivalent. Students should contact the Department of Education for more details.

The professional sequence courses required for secondary education are: EDC 250 (general) and 250 (with methods), 312, 102 or 360, 371, 430, and 448. These courses are taken prior to student teaching. EDC 484 and 485 make up the student teaching semester. PSY 113 and HDF 310 are also required.

Elementary and secondary education students will plan, in cooperation with an advisor, an academic specialization of at least 30 credits. Elementary education students should follow the requirements out-

lined for an Arts and Sciences major. Secondary education students follow the specialization course requirements for the area in which certification is sought. Secondary certification programs are offered in biology, chemistry, English, general science, history, mathematics, modern language, physics, and social studies.

Students must maintain minimum quality point averages of 2.50 overall and 2.50 in the major or specialization, and attain a grade of at least C in EDC 430 and 448 (secondary); EDC 424, 427, and 428 (elementary); HDF 303, EDC 424, 426, and 429 (early childhood) to be eligible for student teaching. Failure to maintain these averages will result in "program probation," a one-semester period during which students have the opportunity to earn acceptable grades but may not student teach. Failure to return grade averages to acceptable standing after one semester leads to dismissal from the program.

The major in elementary education requires 138 credits; secondary education requires 120 credits.

Home Economics

There are two programs in home economics: general home economics and home economics in the urban environment.

Each leads to the Bachelor of Science (B.S.) degree in home economics. Interdisciplinary in nature, the programs provide for academic work in all areas of home economics as well as in other disciplines. Students are prepared for a broad range of careers in business, journalism, community agencies, housing authorities, consumer protection agencies, and schools.

Students are required to take 40–41 credits of home economics core courses, including: CNS 220, 340; FSN 150, 207; HEC 400; HDF 200, 330; HSS 320; and TMD 103, 216. Three additional credits must be chosen from specified lists in each of the areas of consumer studies, human development, food science and nutrition, and textiles.

The program in general home economics requires 18 credits of professional electives;

these should be chosen with the advisor's approval.

Students choosing home economics in the urban environment must select URB 210 and URB 498 or 499, three credits of quantitative methods chosen from a specified list, nine additional credits in urban affairs, plus three additional credits to be chosen with the assistance of an advisor.

Students wishing to major in home economics are strongly encouraged to meet early and often with an advisor to plan their course of study.

Human Development and Family Studies

The curriculum in human development and family studies leads to a Bachelor of Science (B.S.) degree. The Master of Science (M.S.) degree, also offered by the department, is described in the section "Graduate Programs." The undergraduate curriculum provides a general background for work with children, families, and adults. Most professions in human development and family studies require academic work beyond the bachelor's degree for continuing professional work and advancement. Individuals with a baccalaureate degree are employed, however, as professionals in nursery schools, day care centers, institutions and hospitals, and in recreational, child guidance, casework, and other community agencies. Some of the courses in this curriculum, plus certain others in education, meet the requirements for the initial Early Childhood Education Certificate in Rhode Island. For more information, see pages 33-34. Students seeking admission to the bachelor's degree program in human development and family studies must complete the following courses with an overall quality point average of 2.00 or better prior to acceptance for admission: HDF 200 or 201, PSY 113, SOC 100, and three General Education credits in mathematics.

Students are required to complete the following core curriculum: 1) 12 credits of core courses including HDF 200, 201, 202, and 230; and 2) six to 15 credits of experi-

ential learning chosen from the following options—HDF 380, 381; HDF 497; HDF courses that include one credit allocated to practicums, such as 203, 221, and 406; EDC 484, 485 (early childhood education students only); and University Year for Action.

Additionally, students are required to complete a 15-credit concentration in one of the following four areas. Each area consists of nine credits of required courses and six credits to be chosen from a list of restricted electives.

Child and Adolescent Development: required are HDF 203, 310, 400, with restricted electives to be selected from HDF 302 or EDC 425, HDF 357, 406, 432, 434, 455.

Adult Development and Aging: required are HDF 220, 221, 420, with restricted electives to be selected from HDF 421, 431, 437, 440, CNS 342.

Family Studies: required are HDF 430, 433, 434, with restricted electives to be selected from HDF 421, 431, 432, 437, CNS 210, 320, 340.

General Studies in Human Development and Family: required are HDF 420, 430, 203 or 310 or 406, with restricted electives to be selected from HDF 150, 357, 400, 431, 432, 433, 434.

To enhance their concentration, students must also complete 15 credits of professional electives. Professional electives must be approved in consultation with an advisor, and nine of the 15 credits must be at the 300 level or above. Field experience does not meet this requirement.

The program requirements also include 24–33 credits of free electives.

Students who wish to meet the requirements for the initial Early Childhood Education Certificate in Rhode Island must apply to Early Childhood Education through the Office of Teacher Education. If admitted to Early Childhood Education, students must complete the child and adolescent development concentration. The following requirements must also be completed as part of the state-approved teacher education program: HDF 301, 303, 357, and

302 or EDC 425; FSN 207; EDC 102, 250, 312, 350, 424, 426, 429, 484, 485. A portion of these requirements fulfill the professional electives; EDC 484 and 485 meet the requirement for experiential learning.

See pages 33–34 for admission requirements, certification in other states, and other information regarding teacher education.

Students in early childhood education must maintain a quality point average of 2.50 overall and 2.50 in the major, and attain a grade of at least C in HDF 303, EDC 424, 426, and 429 to be eligible for student teaching. Failure to maintain these averages will result in "program probation," a one-semester period during which students have the opportunity to earn acceptable grades but may not student teach. Failure to return grade averages to acceptable standing after one semester will lead to dismissal from the program.

A total of 120 credits are required for graduation.

Human Science and Services

This curriculum leads to the Bachelor of Science (B.S.) degree in human science and services. The program is interdisciplinary and allows students to build academic programs consistent with their personal and career goals.

The program is designed primarily for students who are interested in the broad field of human science and services along with a combination of supporting or applied areas. Career opportunities are varied and include entry-level positions in fields such as health, recreation, instruction and training, family services, and consumer services. Many professional areas in human services require graduate study for significant career advancement; this program is also designed to serve as preparation for a variety of graduate programs. Close contact with an academic advisor is strongly recommended for students in this program.

Required course work includes: PHL 217,⁴¹ PSY 113⁴² or SOC 102⁴² and ECN 100⁴² or PSC 113.⁴² A course in ethics is strongly recommended. In addition, stu-

dents complete a core in human science and services: HDF 200, 201; HSS 222, 320, 350, 399; and a seminar, Each student in the program must also complete two option areas of approximately 18 credits each. Choices of the primary option area include: adulthood and aging, child and youth studies, community health, family studies, home economics, housing, human development, instructional communication, pre-physical therapy, and recreational program services. A wide range of choices is available for the second option area, many of which allow the student to study allied fields in other colleges at the University. Each option area has specific course requirements (some of which include natural science courses that may be taken as General Education requirements); students should check with their academic advisor for a detailed description of the requirements and options.

The program requirements also include a field experience (of at least six academic credits), professional electives (15 credits), and free electives (12 credits).

A total of 129 credits is required for graduation.

Physical Education

This curriculum leads to a Bachelor of Science (B.S.) degree with a major in physical education. The Master of Science (M.S.) program in physical education is described in the section "Graduate Programs."

The major, which has two options, is designed for students who plan to pursue a career within the broad field of health and physical education. Students can prepare for certification as public school teachers (physical education K–12) with additional study opportunities in elementary and secondary physical education, athletic coaching, athletic training, and corrective and adapted physical education. For those who may be interested in nonteaching careers, the curriculum offers a non-teaching option with a specialization in physical fitness or in an individual interdisciplinary area of interest.

The following courses are required of all majors regardless of option chosen: PED 217, 270, 369, 370; physical activity majors practicum (8 credits); HLT 272; BIO 102; chemistry or physics (3 credits); EDC 312; PSY 113, 232; and ZOO 121, 242, 343.

All students are required to complete a minimum of eight practicum credits. All students must take one credit from PED 130, 230, 330, 340, 346, 347, or 430; one credit from PED 131, 133, 140, 153, 160, 233, 234, 235, 242, 251, 253, or 260; and one credit from PED 120. Students enrolled in the teacher certification option must complete five additional credits taken from the following: one credit from PED 321; one credit from PED 222 or 223; 1.5 credits from PED 115 A-H; and 1.5 credits from PED 215 A-G. Students enrolled in the non-teacher certification option must complete five additional credits taken from any major practicum or basic instruction activity course with the approval of their advisor.

In addition to the credit requirements in PED 115 and 215, all students enrolled in the teacher certification option must demonstrate proficiency in a minimum of four activities in each of the two courses. Proficiency may be demonstrated by:

1) the successful completion of an additional major practicum course; 2) passing a proficiency examination administered and verified by a designated examiner; or 3) participation as a member in a varsity or club sport at the University. Participation must be verified in writing by the head coach.

Additionally, all students pursuing the B.S. degree in physical education must complete a two-day camping experience at the W. Alton Jones Campus. All incoming freshmen should check with their University College advisor for further details.

Teacher Certification Option. This option is designed for students seeking teacher certification in physical education at the elementary and secondary school levels. The curriculum allows a broad exploration of subject area, but is flexible enough to provide additional areas of study in teach-

ing, coaching, athletic training, and corrective and adapted physical education. Completion of the NASDTEC-approved certification program fulfills the requirement for teacher certification in the state of Rhode Island and in 25 additional states.

Students interested in undergraduate teacher education programs are required to apply for admission to the Office of Teacher Education, Applications for admission to teacher education programs are normally submitted during the sophomore year. Applications will be reviewed by a departmental screening committee based on the following criteria: 1) recommendations from faculty and others who have knowledge of the candidate's experience or interest in working in education; 2) a writing sample expressing career goals, experience in working with children, and expectations as a teacher; 3) scores on a standardized test(s) of basic skills; 4) the student's academic record, including a cumulative quality point average of 2.50 or better and grades in the academic major or specialization averaging 2.50 or better.

Students denied admission can petition the department for a review of the decision. In such cases, the departmental screening committee meets to consider the appeal. Only exceptional circumstances will lead the appeal committee to override the academic record criteria (2.50 cumulative quality point average and 2.50 in the academic major or specialization).

Applicants who fail to gain admission should seek counsel from an appropriate advisor. Students may reapply for admission to a teacher education program but should understand that this may delay their anticipated graduation date.

Within the teacher certification option, the following courses are required in addition to those required of all majors: PED 295, 314, 315, 324, 380, 410; HLT 310, 367, 382; 12 credits from EDC 486, 487, 488, 489; EDC 485; eight credits of professional electives; and 11 credits of free electives.

All students must have a quality point average of 2.70 in all physical education and health course work prior to student teaching.

Non-Teacher Certification Option. This option is designed for students seeking preparation for careers in community and agency settings. The option provides additional opportunity for a specialization in physical fitness or in an interdisciplinary area of interest.

In addition to the requirements listed above for all physical education majors, students in the non-teacher option are required to take: HLT 123; PED 280; three credits of seminar; 12 credits of supervised field work (HLT or PED 486); 18–24 credits of specialized work; and 16 credits of free electives.

Students selecting the physical fitness specialization must take: FSN 207; PED 243, 275, 325, 425; and three credits from ACC 201, 202; HDF 150, 220, 450; MGT 301; MGS 207; MKT 301; PED 227, 391, 410; or PSY 103.

Students who do not specialize in the physical fitness or the interdisciplinary emphasis may complete a minimum of 18 credits in a college or a University minor. See page 30 for definition of a minor.

Plan for Early Contingent Admission to the Master of Science (M.S.) Degree Program in Physical Therapy. The department participates in the early contingent admission plan for the M.S. in physical therapy. This program is described on page 33.

A total of 130 credits is required for graduation.

Textiles, Fashion Merchandising, and Design

This curriculum leads to a Bachelor of Science (B.S.) degree. The Master of Science (M.S.) program is described in the section "Graduate Programs."

The major is open to both men and women with ability and professional interest in the artistic and technical aspects of the subject. Specialized programs of study

⁴¹ May be taken as part of the General Education requirements (Letters).

⁴² May be taken as part of the General Education requirements (Social Sciences).

prepare students for positions in the merchandising of apparel and interior furnishings, textile and apparel manufacturing, consumer services, or museum work. Qualified students can prepare for graduate studies.

The following core courses are required: TMD 103; 224; 216 and 336, or 222 and 327; 303;43 313; 240, 340, 406, or 440; 433;44 CNS 220; ECN 201 and 202; CHM 103, 105, 124, and 126. Twelve credits of TMD electives (six credits must be upper-level courses) and 18 credits of professional electives (nine credits from any one area) are required. Students should select TMD electives and professional electives in accordance with the specializations outlined below. Students must have completed the General Education Mathematics requirement before admission into the College of Human Science and Services.

Apparel Studies. Students choosing this area of emphasis should select 12 credits of electives from TMD 222, 325, 327, 335, and an additional 18 credits of professional electives⁴⁵ from art, management, marketing, or theatre.

Fashion Merchandising. Students choosing this area of emphasis should select 12 credits of electives from TMD 222, 232, 327, 332, 422, 432, and an additional 18 credits of professional electives⁴⁵ from accounting, business law, management, management science, marketing, and/or art

Interior Furnishings and Design. Students choosing this area of emphasis should select 12 credits of electives from TMD 216, 316, 336, 406, 416, 496, and an additional 18 credits of professional electives⁴⁵ from art and/or business.

General TMD Program. Students may structure their own programs by concentrating course work in areas such as consumer studies, museum work, journalism, or gerontology. By the end of the sophomore year, students should file a program of study with their advisor. Selection of the 12 required TMD elective credits and the 18 professional elective credits⁴⁵ should strengthen career goals and interests.

Textile Science. Students selecting this area of concentration should take TMD 403 and 413 as well as additional chemistry, chemical engineering, and/or statistics courses. An internship in textile manufacturing is recommended. By the end of the sophomore year, students should file a program of study with their advisor. The 18 credits of professional electives45 should be selected from: MTH 111, 131; PHY 111 and 112 or 213 and 214; STA 308 or 412 or CSC 201; CHM 112, 114, 212, 226, 227, or 228. Opportunities for off-campus study in other areas of textile science are available through the New England Land-Grant Student Exchange Program.

A total of 125 credits is required for graduation.

Textile Marketing

This interdepartmental curriculum leads to a Bachelor of Science (B.S.) degree with a major in textile marketing. It combines the professional requirements of a major in textiles with the requirements of the College of Business Administration and is designed to prepare students for wholesale and retail marketing positions in the textile industry. Before admission into the degree-granting colleges, students must complete CHM 103, 105, 124, and 126 and the General Education Mathematics requirement.

Due to limited staff and facilities, transfers from University College to the undergraduate degree program in textile marketing must be limited to no more than 10 a year. Those admitted stand in the highest 10 when cumulative quality point averages are computed at the end of the third semester. Although cumulative averages are not the sole criterion for admission, students with overall quality point averages of less than 2.50 are advised that there is little chance for admission to this program.

Students selecting this curriculum must take the following courses: TMD 103, 224,

303, 313, 240, or 340 or 406 or 440, 403, 433, and three credits of a TMD elective; CHM 105, 126; MTH 131; STA 308, 412; CSC 201; ACC 201 and 202; MGT 300 or 301; BSL 333; MKT 301, 311, 415, and nine credits of MKT electives.

Students must also take the following courses to complete the General Education requirements: MTH 111; CHM 103, 124; and ECN 201, 202.

A total of 120 credits is required for graduation.

COLLEGE OF NURSING

Dayle H. Joseph, Interim Dean

The College of Nursing offers a curriculum leading to the Bachelor of Science (B.S.) degree. The Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) degrees are also offered by the college.

Faculty: Professors Hirsch, S. Kim, McGrath, J. Miller, Schmieding, and Schwartz-Barcott; Associate Professors Burbank, Feather, Fortin, Garey, Joseph, and Yeaw; Assistant Professors Dufault, Evans, Fimbel-Coppa, Godfrey, Haggerty, Hames, Martins, Padula, M. Palm, Viau, and Waldman.

The baccalaureate program is designed to prepare men and women with academic and personal potential to become professional nurses. It aims to develop mature, well-informed graduates who will take their places as responsible members of society in meeting the challenges of health care delivery and continued learning.

The curriculum is based on the belief that nursing is a creative activity that provides human services for the promotion of health, prevention of illness, and care of the ill. It is interdependent with all other disciplines concerned with health. Nursing knowledge is viewed as a unique synthesis drawn from the humanities and the natural, biomedical, and social sciences. Students use a systems perspective as a conceptual base to nursing. This conceptual approach to nursing incorporates the whole person and his or her environment

with the nursing process. Nursing courses include observation and clinical practice in numerous hospitals, community agencies, schools, nursing homes, and physicians' offices throughout the state of Rhode Island.

There are three routes to admission to the College of Nursing baccalaureate program.

- 1) Students with no previous college study begin their preparation in University College with dual enrollment in the College of Nursing. After completion of 37–50 credits (which must include required foundation courses) with a minimum 2.20 overall quality point average and a 2.20 quality point average in the foundation courses, they may apply for transfer to the College of Nursing. Priority is given to students with strong academic records and positive recommendations from faculty in introductory nursing courses.
- 2) Students with college study in another major or some nursing study in another baccalaureate program and a minimum of 45 completed credits, if accepted by the University, may be admitted directly. Students who transfer from another college or university are admitted into clinical nursing courses on a space-available basis. To enroll in clinical nursing courses, transfer students must meet the requirement of a minimum 2.20 quality point average overall and in the foundation courses. Grades from courses taken at the other institution are not included in the student's quality point average.
- 3) Registered nurse students who have completed diploma or associate degree programs are not required to submit scholastic aptitude scores when seeking admission. As adult students who have developed competence in basic subject areas, they may demonstrate their mastery by completing the College Level Examination Program (CLEP) sponsored by the College Entrance Examination Board. Advanced credit allowances are based on a review of the candidate's test scores and preparatory experience. Following direct admission to the college, students have the option of

seeking credit by proficiency examination (ACT-PEP exams) in subjects previously studied. They are required to enroll in some upper-division nursing courses and to meet the remaining program specifications. R.N. students must have an active Rhode Island nursing license and malpractice insurance.

The usual time for completion of all requirements for students with no previous college or nursing study is eight semesters and one summer session. All students in the College of Nursing meet all of the General Education requirements of the University, as listed on pages 29-30. Entry into clinical courses is competitive and based on grade point average and the number of semesters students have been enrolled in nursing. A minimum grade of C must be achieved in all required nursing courses. The faculty reserves the right to require withdrawal from the college of a student who gives evidence academically and/or personally of inability to carry out professional responsibility in nursing. The student is limited to 18 credits per semester except by permission of the Dean for special program adjustments or when participating in the Honors Program.

General expenses for students in the College of Nursing are approximately the same as for all other University students. Special items include uniforms, nursing equipment, transportation, and one summer session. The use of an automobile or funds to meet public transportation costs is required for the clinical experiences. Students must maintain car insurance as required by state law.

The program is approved by the National League for Nursing and the Rhode Island Board of Nurse Registration and Nursing Education. The graduate is eligible for examination for professional licensure as a registered nurse (R.N.).

Curriculum Requirements

Foundation Courses. The following are required before transfer from University College: CHM 103 (3), 124 (3); FSN 207 (3); MIC 201 (4); NUR 103 (3); PSY 113 (3);

ZOO 121 (4), 242 (3), 244 (1); one writing (Cw) course (3).

The following are prerequisites for nursing courses, and therefore are recommended during the first three semesters: NUR 103 (3); PSY 232 (3); SOC 100 (3); STA 220 (3).

An example of the curriculum plan follows. (Individual programs may vary.)

The curriculum is currently under revision and therefore is subject to change. Students should check with the college for the most current information.

Freshman Year
First semester: 14 credits

- 4 ZOO 121 Human Anatomy
- 3 SOC 100 General Sociology
- 3 CHM 103 Introductory Chemistry Lecture
- 1 URI 101 Freshman Seminar
- 3 General Education requirement (Cw)

Second semester: 16 credits

- 3 ZOO 242 Human Physiology
- 1 ZOO 244 Human Physiology Laboratory
- 3 CHM 124 Introduction to Organic Chemistry
- 3 PSY 113 General Psychology
- 3 NUR 103 Professional Practice in Health and Illness
- 3 General Education requirement (C)

Summer Session

3-6 General Education requirements

Sophomore Year

First semester: 16 credits

- 4 MIC 201 Introductory Medical Microbiology
- 3 STA 220 Statistics in Modern Society
- 3 PSY 232 Developmental Psychology

⁴³ Organic chemistry is a prerequisite for TMD 303.

⁴⁴ Economics is a prerequisite for TMD 433 and CNS 220.

⁴⁵ Professional electives are courses related to the student's career goals and are subject to approval by an advisor.

- 3 NUR 203 Comprehensive Health Assessment
- 3 FSN 207 General Nutrition

Second semester: 17 credits (or 15 credits⁴⁶)

- 3 NUR 210 Pathophysiology I
- 3 NUR 230 General Methods and Strategies in Nursing Practice I
- NUR 235 Practicum in General Nursing Strategies I
- 3 NUR 250 Nursing in Health Promotion
- NUR 255 Practicum in Health Promotion Nursing
- 6 General Education requirements (A, F, or L)

Junior Year

First semester: 17 credits

- 2 PCL 225 Pharmacology and Therapeutics I
- 3 NUR 212 Pathophysiology II
- 3 NUR 270 Scientific Inquiry in the Practice of Nursing
- 3 NUR 350 General Methods and Strategies in Nursing Practice II
- 3 NUR 355 Practicum in General Nursing Strategies II
- 3 General Education requirement (A, F, or L)

Second semester: 16 credits

- 2 PCL 226 Pharmacology and Therapeutics II
- 3 NUR 370 Nursing in Short-Term Health Care
- 3 NUR 375 Practicum in Short-Term Health Care for Adults
- 2 NUR 410 Psychopathology
- 3 NUR 415 Practicum in Mental Health and Psychiatric Nursing
- 3 Restricted elective

Senior Year

First semester: 17 credits

- 3 NUR 300 Theories and Issues in Professional Role Development
- 3 NUR 420 Family Health Nursing
- 2 NUR 425 Practicum in Family Health Nursing
- 3 NUR 430 Community Health Nursing
- 3 NUR 435 Practicum in Community Health Nursing

3 General Education requirement (A, F, or L)

Second semester: 16 credits

- 3 NUR 445 Practicum in Nursing of Children
- 3 NUR 450 Nursing in Long-Term Health Care
- 4 NUR 455 Practicum in Long-Term Care of Adults
- 6 Two free electives

Required Courses for the Nursing Major. The following are required for the nursing major: NUR 103 (3), 210 (3), 212 (3); 230 (3), 235 (1), 250 (3), and 255 (1) or 203 (3), 223 (3), and 224 (3); 270 (3), 300 (3), 350 (3), 355 (3), 370 (3), 375 (3), 410 (2), 415 (3), 420 (3), 425 (2), 430 (3), 435 (3), 445 (3), 450 (3), and 455 (4).

General Education Requirements and Electives. The General Education requirements must be completed with the exception that one of the following divisions may be reduced by three credits: Fine Arts and Literature (A), Letters (L), or Foreign Language and Culture (F).

Six credits of free electives are required. With the help of an advisor, students must also choose three credits of restricted electives from an approved list of courses.

A total of 128 credits is required for graduation.

COLLEGE OF PHARMACY

Louis A. Luzzi, Dean Joan M. Lausier, Associate Dean

The College of Pharmacy offers a fiveyear curriculum leading to the Bachelor of Science (B.S.) degree in pharmacy. Beginning with the Class of 1995, a limited number of students will be chosen from the fourth-year class to continue for two more years in a program leading to the Doctor of Pharmacy (Pharm.D.) degree. The college also awards two graduate degrees: the Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) in pharmaceutical sciences, both offered by all departments except Pharmacy Practice.

Pharmacy

The five-year and six-year curriculums are patterned on presently accepted programs of study recommended by the American Association of Colleges of Pharmacy, the American Council on Pharmaceutical Education, and other interested organizations. They are accredited by the American Council on Pharmaceutical Education and by the University of the State of New York, Division of Professional Education.

The program in pharmacy provides preparation for community and institutional pharmacy practice. In addition, students have opportunities through the selection of professional electives to commence a specialization in one of several areas of pharmacy, including hospital, clinical, manufacturing, medical supply servicing, drug analysis, administration, and research.

Of the prepharmacy students requesting transfer from University College to the College of Pharmacy at the end of three semesters, priority will be given to those applicants having a 2.50 quality point average or better in required preprofessional courses (CHM 101, 102, 112, 114, and 227; ZOO 111, 121, 242, and 244; MTH 131; and MIC 201) with no grade less than C- in any of these courses, and an overall quality point average of 2.00. Applicants with an average between 2.00 and 2.50 in these courses will be considered for admission on a competitive basis along with other URI undergraduate students and with transfer students from other institutions. Applicants with a quality point average of less than 2.00 for the designated prepharmacy courses will not be considered for admission to the College of Pharmacy. At the end of four semesters, the foregoing courses plus CHM 226, 228; STA 307; and BCH 311 (or equivalent courses where permitted) will be included in the calculation of the preprofessional quality point average.

Unless otherwise indicated, courses offered by the college are restricted to pharmacy majors. A student will not be allowed to proceed into PHP 484, 485, or 490 without at least a 2.00 quality point average in required professional pharmacy courses. A student with less than a 2.00 will not be allowed to take any professional courses not previously taken, but will be allowed to repeat up to 10 credits of pharmacy courses in which he or she received a C or less.

A quality point average of 2.00 in all required professional courses given by the College of Pharmacy is required for graduation with a B.S. or Pharm.D., degree. This is in addition to University grade requirements.

Students in certain other New England states may enroll in pharmacy under the New England Regional Student Program. (See page 27.)

Transfer into the College of Pharmacy from another institution or from other programs at the University is highly competitive. Preference is given to students who have already completed the science courses equivalent to those required in the prepharmacy curriculum, as previously described. Students may transfer credits for courses in which they have earned a C or better. Questions concerning the transferability of specific courses and of the evaluation process should be directed to the Associate Dean of Pharmacy.

Faculty

Applied Pharmaceutical Sciences: Professor Needham, chairperson. Professors N. Campbell, Kislalioglu, C. Rhodes, Taubman, and Zia; Associate Professors Rosenbaum and Willy Lessne; Assistant Professor Larrat; Adjunct Professors Breuer, Bronaugh, Crouthamel, Gerraughty, Hoffman, Lukas, Malick, Marshall, Monkhouse, Sado, and Woodruff; Adjunct Associate Professors Birmingham, Horhota, Mojaverian, Shah, and Szymanski; Adjunct Assistant Professors Beatrice, Marcoux, Romeo, Rudnic, and Stetsko.

Medicinal Chemistry: Professor Panzica, chairperson. Professor Abushanab; Assistant Professor Cho; Adjunct Assistant Professor Lalor; Professors Emeriti Bond and C. Smith.

Pharmacognosy and Environmental Health: Professor Luzzi, acting chairperson. Professor Shimizu; Assistant Professor L. Martin; Adjunct Professor Nakanishi; Adjunct Assistant Professor Omar; Professors Emeriti Worthen and Youngken.

Pharmacology and Toxicology: Professor Shaikh, chairperson. Professors Rodgers and Swonger; Associate Professors Babson and Chichester; Adjunct Professor Malcolm; Adjunct Associate Professors Barrach, Boekelheide, Capasso, Giambalvo, Levinsky, and Nagata; Adjunct Assistant Professors Baksi, Fisher, Jackim, and Kiron.

Pharmacy Practice: Professor Dudley, chairperson. Associate Professors Barbour, Hume, and Owens; Assistant Professors Dufresne, Geletko, Highet, McKindley, and Stoukides.

Bachelor of Science Curriculum Requirements

The five-year accredited program for the Bachelor of Science (B.S.) provides time for the General Education requirements as described on pages 29–30. The major portion of the professional program begins in the third year, when basic pharmaceutical and clinical disciplines are introduced.

Each year, the curriculum is supplemented by field trips to selected pharmaceutical industries. Students also make use of selected hospital and community pharmacies in Rhode Island and New England for specialty externships and clerkships.

A total of 168 credits is required for graduation.⁴⁷

First Year

First semester: 14 credits

- 3 CHM 101 General Chemistry Lecture I
- 1 CHM 102 Laboratory for Chemistry 101
- 3 A University-approved English communication course except BGS 100⁴⁸

- 4 ZOO 111 General Zoology
- 3 Elective

Second semester: 17 credits

- 3 CHM 112 General Chemistry Lecture II
- 1 CHM 114 Laboratory for Chemistry 112
- 3 MTH 131 Basic Calculus I
- 3 A University-approved English communication course except BGS 100⁴⁸
- 4 ZOO 121 Human Anatomy
- 3 Elective

Second Year

First semester: 17 credits

- 3 CHM 227 Organic Chemistry Lecture I
- 3 ECN 201 Principles of Economics: Microeconomics
- 4 MIC 201 Introductory Medical Microbiology
- 3 ZOO 242 Introductory Human Physiology
- 1 ZOO 244 Introductory Human Physiology Laboratory
- 3 Elective

Second semester: 17 credits

- 3 BCH 311 Introductory Biochemistry
- 3 CHM 228 Organic Chemistry Lecture II
- 2 CHM 226 Organic Chemistry Laboratory
- 3 STA 307 Introductory Biostatistics
- 6 Electives

Third Year

First semester: 16-17 credits

- 2 MCH 343 Principles of Medicinal Chemistry
- 3 PCL 327 Introduction to Human Pathophysiology
- 2 APS 327 Biopharmaceutics
- 3 APS 349 Pharmacy Administration Principles and
- Students entering in the fall of 1995, transfer students, and students who have changed their majors take NUR 203 Comprehensive Health Assessment (3), NUR 223 Nursing in Health Promotion (3); and NUR 224 Practicum in Health Promotion Nursing (3) instead of NUR 230, 235, 250, and 255.
- 47 Proficiency in the American Red Cross Standard First Aid and Community CPR is expected of each student prior to graduation.
- 48 CMS 101 (six credits) may be substituted for the writing requirement.

Section A

- 3 APS 340 Physical Pharmacy
- 3 APS 350 Pharmaceutical Technology
- 1 APS 360 Pharmaceutical Technology Laboratory

or

Section B

- 3 MCH 342 Pharmaceutical Analysis
- 3 Elective

Second semester: 18-19 credits

- 3 PCG 445 General Pharmacognosy
- 3 PCL 444 General and Clinical Pharmacology and Toxicology I
- 3 APS 328 Pharmacokinetics
- 3 APS 351 Pharmaceutical Law and Ethics and Section A
- 3 MCH 342 Pharmaceutical Analysis
- 3 Elective or

Section B

- 3 APS 340 Physical Pharmacy
- 3 APS 350 Pharmaceutical Technology
- 1 APS 360 Pharmaceutical Technology Laboratory

Fourth Year

First semester: 19 credits

- 3 MCH 443 Organic Medicinal Chemistry
- 3 FSN 444 Nutrition and Disease
- 3 PCL 445 General and Clinical Pharmacology and Toxicology II
- 3 PCG 446 General Pharmacognosy
- 4 PHP 455 Pharmacotherapeutics I
- 3 APS 459 Public Health

Second semester: 19 credits

- 3 MCH 444 Organic Medicinal Chemistry
- 3 PCL 446 General and Clinical Pharmacology and Toxicology III
- 1 PCL 443 General Pharmacology Laboratory
- 2 APS 448 Third-Party Prescription Programs
- 4 PHP 456 Pharmacotherapeutics II and Section A
- 6 Electives or

Section B

- 1 APS 461 Health-Related Supplies
- 3 APS 462 Nonprescription Drugs
- 2 PHP 471 Contemporary Pharmacy Practice Laboratory

Fifth Year

First semester: 15 credits

Section A

- 1 APS 461 Health-Related Supplies
- 3 APS 462 Nonprescription Drugs
- 2 PHP 471 Contemporary Pharmacy Practice Laboratory
- 9 Electives or

Section B

- 5 PHP 484 Institutional Pharmacy Externship
- 5 PHP 485 Community Pharmacy Externship
- 5 PHP 490 Clinical Pharmacy Clerkship

Second semester: 15 credits

Section A

- 5 PHP 484 Institutional Pharmacy Externship
- 5 PHP 485 Community Pharmacy Externship
- 5 PHP 490 Clinical Pharmacy Clerkship or Section B
- 15 Electives

Doctor of Pharmacy Curriculum Requirements

This clinically oriented curriculum becomes a separate track from the B.S. program in the fifth year. Students in the B.S. program may apply for admission to the Doctor of Pharmacy (Pharm.D.) program no sooner than the fall of the fourth year. Only students in good academic standing who have met all of the prerequisites may apply. In addition to the application form, students must submit a letter of purpose as well as letters of recommendation from individuals who have known the applicant in a professional capacity. Students admitted to the Pharm.D. program will complete the fourth-year curriculum of the B.S. program in Section B. The students will spend

the fifth year in advanced clinical course work. The summer after the fifth year is spent fulfilling extemship requirements for licensure, and the sixth year is spent in clerkship rotations. Graduates of the Pharm.D. program are eligible to sit for the national licensing examination.

A total of 207 credits is required for graduation.

Fifth Year

First Semester: 16 credits

- 3 PHP 511 Advanced Pharmacotherapeutics I
- 3 APS 535 Pharmacokinetics
- 2 PHP 542 Drug-Induced Diseases
- 4 PHP 561 Advanced Human Pathophysiology I
- 1 PHP 581 Seminar
- 3 Elective

Second Semester: 18 credits

- 3 PHP 411 Biostatics II
- 3 PHP 512 Advanced Pharmacotherapeutics II
- 1 PHP 544 Physical Assessment
- 4 PHP 562 Advanced Human Pathophysioloy II
- 1 PHP 582 Seminar
- 6 Electives

Summer Session: 5 credits

One of the rotations below:

- 5 PHP 484 Institutional Pharmacy Externship
- 5 PHP 485 Community Pharmacy Externship
- 5 PHP 590 Advanced Clinical Pharmacy Clerkship

Sixth Year

First Semester: 15 credits

- 5 PHP 484 Institutional Pharmacy Externship
- 5 PHP 485 Community Pharmacy Externship
- 2 x 5 PHP 590 Advanced Clinical Pharmacy Clerkship

Second Semester: 15 credits

3 x 5 PHP 590 Advanced Clinical Pharmacy Clerkship

For students in the Pharm.D. program who already have a B.S. in pharmacy:

Fifth Year

First Semester: 13 credits

- 3 PHP 511 Advanced Pharmacotherapeutics I
- 3 APS 535 Pharmacokinetics
- 2 PHP 542 Drug-Induced Diseases
- 4 PHP 561 Advanced Human Pathophysiology I
- 1 PHP 581 Seminar

Second Semester: 12 credits49

- 3 PHP 411 Biostatics II50
- 3 PHP 512 Advanced Pharmacotherapeutics II
- 1 PHP 544 Physical Assessment
- 4 PHP 562 Advanced Human Pathophysiology II
- 1 PHP 582 Seminar

Summer Session: 5 credits

5 PHP 590 Advanced Clinical Pharmacy Clerkship

Sixth Year

First Semester: 15 credits

3 x 5 PHP 590 Advanced Clinical Pharmacy Clerkship

Second Semester: 15 credits

3 x 5 PHP 590 Advanced Clinical Pharmacy Clerkship

COLLEGE OF RESOURCE DEVELOPMENT

Margaret S. Leinen, *Interim Dean*Patrick A. Logan, *Interim Associate Dean*

The College of Resource Development offers majors leading to two degrees: the Bachelor of Science (B.S.) and the Bachelor of Landscape Architecture (B.L.A.) degrees. The following majors are offered within the Bachelor of Science degree program: animal science and technology, aquaculture and fishery technology, dietetics, environ-

mental management, food science and nutrition, plant science, resource economics and commerce, soil and water resources, urban affairs, urban horticulture and turfgrass management, and wildlife biology and management.

Options have been developed within certain majors to help students prepare for specific graduate study, further professional training, or specialized careers at the B.S. level. Entering freshmen and transfer students with fewer than 24 credits are admitted to University College, and may choose a major in the College of Resource Development at that time. Students may choose an option when they transfer to the College of Resource Development or at a later time.

Undergraduate students from any college may develop a minor from one of the majors offered by the College of Resource Development. Details can be worked out with an appropriate faculty advisor. In addition, most departments have an internship program for combining hands-on professional experience with academic credit.

Students majoring in animal science, environmental management, plant science, soil and water resources, and wildlife biology and management who are interested in careers as secondary-school teachers in agricultural education and natural resources may meet the Rhode Island Department of Education certification requirements with appropriate advisement. The 42 credits required for teacher certification in agriculture can be incorporated into the undergraduate degree program as supporting or free electives. See teacher education programs, pages 33-34, for details. Students interested in teacher certification should contact Associate Professor Mallilo as a second advisor.

Graduate programs leading to the Master of Science (M.S.) degree are offered in most departments. Several programs lead to the Doctor of Philosophy (Ph.D.) degree. The professional degree of Master of Community Planning (M.C.P.) is offered by the Department of Community Planning and Area Development. Detailed descrip-

tions of the several graduate programs appear in the section "Graduate Programs."

Faculty members in the College of Resource Development differ from those in the other colleges in that most hold a joint appointment with the Rhode Island Agricultural Experiment Station and the Rhode Island Cooperative Extension. These units represent the formal research and public service functions of the college and are funded with federal and state monies.

Faculty

Community Planning and Area Development: Professor Feld, director. Associate Professors Atash, Feldman, H. Foster, and Jensen; Adjunct Professor Thomas and Kumekawa; Adjunct Associate Professor Shaw; Adjunct Assistant Professors Flynn, Motte, Parella, Ruggerio, Schatz, Westcott, and Winsor.

Fisheries, Animal and Veterinary Science:
Professor Nippo, chairperson. Professors
DeAlteris, McCreight, R. Rhodes, and
Wolke; Associate Professors Bradley,
Mallilo, Recksiek, Rice, and Wing (equiv.);
Assistant Professor Whitworth; Adjunct Professor Kaiser; Adjunct Associate Professors
Bodammer, Fleming, Klein-MacPhee, and
Pechenik; Adjunct Assistant Professors
Balmforth, Blott, and Ganz.

Food Science and Nutrition: Professor Traxler, chairperson. Professors M. Caldwell, Constantinides, C. Lee, and Rand; Associate Professors English, Gerber, Greene, and Patnoad; Assistant Professor Fischl; Adjunct Professor Josephson; Adjunct Associate Professor Sebelia; Adjunct Assistant Professor Gianquitti.

Students who have taken any of the required didactic courses listed in the first year for a grade will receive credit for that course toward their Pharm.D. degree (this is to accommodate those students who have taken course work prior to applying and being accepted as a Pharm.D. student).

⁵⁰ Students may substitute APS 540 Principles, Methods, and Applications of Epidemiology for PHP 411.

Landscape Architecture: Associate Professor Simeoni, coordinator. Associate Professor Hanson; Assistant Professor Green; Adjunct Assistant Professor Weygand.

Natural Resource and Environmental Economics: Professor Weaver, chairperson. Professors Anderson, Gates, Grigalunas, Opaluch, Sutinen, and Tyrrell; Associate Professors Swallow, Wessells, and Wilchens; Adjunct Professor Aguero; Adjunct Assistant Professor Andersen.

Natural Resources Science: Professor W. Wright, chairperson. Professors August, J. Brown, Gold, Golet, Husband, and R. Miller; Assistant Professor Amador; Adjunct Research Professor P. Buckley; Adjunct Associate Professor Groffman; Adjunct Assistant Professors Bleich, Jantrania, Gorres, and Wallace; Adjunct Assistant Research Professor F. Buckley; Adjunct Assistant Research Wildlife Biologists DeRagon and Tefft.

Plant Sciences: Professor Hull, chairperson.
Professors Casagrande, N. Jackson, LeBrun, Logan, and Mueller; Associate Professors Alm, Chandlee, Duff, Englander, Krul, Mather, Shaw, and W. Sullivan; Assistant Professors B. Maynard and Ruemmele; Adjunct Professor Taylorson; Adjunct Associate Professor Ginsberg; Adjunct Assistant Professors Bascom, Dellaporta, Gettman, Mallon, and E. Roberts.

Bachelor of Landscape Architecture Curriculum Requirements

Landscape architecture is a curriculum leading to the Bachelor of Landscape Architecture (B.L.A.) degree. Accredited by the American Society of Landscape Architects, the curriculum is designed to prepare undergraduates for professional careers in the public and private sectors of landscape architecture that involve the design, planning, preservation, and restoration of the landscape by applying both art and science to achieve the best use of our land resources.

Landscape architects engage in the design and planning of parks, recreation areas, new communities and residential developments, urban spaces, pedestrian areas, commercial centers, resort developments, transportation facilities, corporate and institutional centers, industrial parks, and waterfront developments. Their professional skills may also be used to design natural, historic, and coastal landscape preservation projects.

The requirements of this curriculum include preparation in the basic arts and sciences. The major includes 52 credits of program courses; 24 credits of supporting requirements; and 18 credits of approved supporting electives through which a student may obtain additional preparation in art, community planning, natural resources, or plant science. A minimum of 130 credits is required for graduation.

Landscape architecture is an oversubscribed program. Accreditation standards regarding staff and facilities limit the present student acceptance into the major to 20 per year and requires a competitive admissions policy. Students will be reviewed twice during the course of their studies: first for admission into the lowerdivision design sequence and again for acceptance into the upper-division B.L.A. major. A cumulative quality point average requirement is determined each year for both of these reviews. In recent years, the cutoff has ranged from 2.40 to 2.60 for those accepted to either the lower or the upper division.

Admission into the lower-division design sequence courses (LAR 243 and 244) requires departmental approval. Approximately 50 percent of the openings are filled by students entering as incoming freshmen or transfer students through the Office of Undergraduate Admissions (subject to their maintaining a minimum 2.00 quality point average with no grades in LAR courses below a C). These students will begin the design sequence in the fall semester of their second year at URI. The remaining openings are filled by matriculated students through an application

accompanied by a transcript of grades. Applications and transcripts will be evaluated in February of each year for acceptance into the lower-division courses in the coming fall.

Acceptance into the upper-division (junior-senior) landscape architecture major will be based upon submission and review of a portfolio of lower-division work, academic transcripts, and a written essay. A maximum of 20 students per year will be accepted into the upper-division curriculum. Eligible applicants for the upper division are students enrolled in LAR 244, repeat applicants, and students who wish to transfer directly into the upper division from other landscape architecture programs. Only students who have completed comparable lower-division courses in programs that have been accredited by the American Society of Landscape Architects will be allowed to compete for these upper-division positions. Such transfer applicants must first be accepted into the University by the Office of Undergraduate Admissions and have their portfolio, transcripts, and essays submitted to the coordinator of the landscape architecture program before February 15 preceding the fall semester in which they wish to enroll. Students will be notified of their acceptance into the upper-division program before preregistration for fall classes.

Interested students should discuss entrance probabilities with the program advisor.

Bachelor of Science Curriculum Requirements

All B.S. programs offered in the college require a minimum of 130 credits for graduation, except for resource economics and commerce, which requires a minimum of 125 credits. Required courses come from three categories: General Education requirements (36 credits); program requirements (77–85 credits); and free electives (9–12 credits).

The following outline gives the basic General Education requirements for all students in the B.S. curriculum. Individual programs may require that specific courses be selected.

English Communication (6 credits). Three credits in written communication from courses in Group Cw, and three credits in oral communication from communication studies.

Mathematics (3 credits)
Natural Sciences (6 credits)
Social Sciences (6 credits)

In addition, 15 credits must be chosen from:

Letters (3-6 credits)

Fine Arts and Literature (3–6 credits)
Foreign Language and Culture (3–6 credits)
Total: 36 credits.

The major requirements include introductory professional courses, basic sciences, concentration courses, and supporting electives. Advisory materials for each major include a list of these required courses and are available in the Office of Student Affairs. Working closely with their faculty advisors, students can shape their major to accommodate individual needs and interests.

Free elective courses are available in each major to give students the opportunity to study in areas that are unrelated to their principal area of interest.

Impacted Status of Programs in Natural Resources Science. Due to limited staff and facilities, the total number of transfers from University College to the undergraduate majors offered by the Department of Natural Resources Science must be limited to 30–40 students each year. These majors are: environmental management, soil and water resources, and wildlife biology and management. The competitive admission policy that has been established to deal with student demand consists of required courses, a minimum number of

credits, and a weighted quality point average requirement that is determined each year.

Before applying for admission to the College of Resource Development in a natural resources science major, students must complete at least 24 credits of course work, including five of the following courses: NRS 100; BOT 111 or BIO 101; ZOO 111 or BIO 102; GEL 103; CHM 103, 105 or CHM 101, 102 or CHM 124, 126; and MTH 131 or PHY 109, 110. The weighted quality point average emphasizes the grades received in the required basic science courses. It is likely that the cutoff for the weighted quality point average will be in the range of about 2.60 to 3.00.

Applications for admission to one of the majors in natural resources science for the coming academic year must be received by the last day of January, Applications are evaluated only once each year, in early February. Applicants who are accepted will be notified by the last day of February. Admission will be limited to those students with the highest weighted quality point averages. Although those below the cutoff may reapply the following year, they are strongly advised to choose a major outside natural resources science and to select new courses appropriate to that major for the fall. Students who have not satisfied entrance requirements may petition the NRS Curriculum Committee for a waiver of those requirements. Petition forms are available in the main office of the Department of Natural Resources Science.

Transfer students from other institutions must meet the same requirements, as stated above, and will be considered for admission to programs in natural resources science with other students from University College during the February evaluation period.

To ensure that natural resources science majors have access to required courses, a strict registration policy will be followed. Highest priority for NRS courses will be given to natural resources science majors. Students in other majors will be accommodated on a space-available basis.

Animal Science and Technology

This major, offered by the Department of Fisheries, Animal and Veterinary Science, is designed for students interested in applied animal science careers. Options are available to students interested in veterinary medicine, animal sciences, and laboratory animal science. Those students who intend to use their study in animal science as credentials for secondary-school teaching should also enroll in this major.

The major requires a minimum of seven credits in introductory animal science and genetics; eight credits in zoology and botany; eight credits in inorganic chemistry; and three credits in mathematics. Also required are nine to 12 credits in basic science, 24 credits of concentration courses, and 26–29 credits of supporting electives approved for the major.

Animal Management Option. This option provides a broad basis in animal science. A variety of scientific disciplines, together with their practical application to animal management, is available. Students usually seek employment in animal agriculture or in the agri-industry.

In addition to the requirements of the major, students choosing this option must complete six credits in animal management for the concentration. The remaining credit requirements in the basic sciences, concentration, and supporting electives must be selected from courses approved for this option.

Animal Science Option. This option includes animal nutrition, physiology, behavior, and disease. Students will normally emphasize one or more of these areas. A strong preparatory background in the basic sciences is needed. Students in this option seek employment in technical areas and/or continue their studies in specialized graduate programs.

In addition to the requirements of the major, students choosing this option must complete the following basic science requirements: four to eight credits in organic chemistry, three credits in introductory cal-

culus, and four credits in microbiology. A course in animal anatomy and physiology is required in the concentration. The remaining credit requirements will be selected from the concentration courses and supporting electives approved for this option.

Laboratory Animal Option. Research techniques and procedures for animal care are emphasized along with a strong background in the sciences. Students with this training and animal experience would be employed in research and teaching facilities as animal technicians, animal technologists, supervisors of animal technicians, and assistant research project leaders.

In addition to the requirements of the major, students must complete the following basic science requirements: four to eight credits in organic chemistry, three credits in introductory calculus, four credits in microbiology, and three credits in statistical methods. Six credits in animal management, three credits in animal anatomy and physiology, and three credits of general nutrition are required in the concentration. The remaining credit requirements will be selected from the concentration courses and supporting electives approved for this option.

Preveterinary Option. This option prepares students for admission to veterinary schools offering the D.V.M. degree and requires a demonstrated capability in the basic sciences. Because admission requirements among schools are not totally uniform and are subject to change, students should determine specific requirements of the schools in which they are interested. Those who are not accepted for veterinary training will be well prepared to pursue graduate programs in animal physiology and health.

In addition to the requirements of the major, students must complete the following basic science requirements: eightcredit, two-semester sequence in organic chemistry, three credits in biochemistry, four credits in microbiology, eight credits

in general physics, three credits in introductory calculus, and three credits in intermediate calculus or statistical methods in research. Three credits in animal anatomy and physiology are required in the concentration. The remaining credits will be selected from the concentration courses and supporting electives approved for this option.

Aquaculture and Fishery Technology

This major, offered by the Department of Fisheries, Animal and Veterinary Science, prepares students for professional or technical careers in aquaculture or fisheries-oriented occupations. It is sufficiently broad to allow for specialization in either fisheries or aquaculture science and technology. Students who demonstrate superior ability in the basic sciences and wish to continue their professional training can select a course curriculum that will both prepare them for graduate school and provide a broad overview in fisheries and aquaculture science and technology.

The major requires a minimum of nine credits in introductory professional courses including natural resource conservation, fisheries or aquaculture, and resource economics; six to eight credits in animal and plant biology; four credits in general chemistry; four additional credits in general or organic chemistry; and nine to 12 additional credits in basic science selected from an approved course list in the Departments of Biological Sciences, Chemistry, Computer Science and Statistics, Mathematics, and Physics. In addition, the major requires 24 credits in concentration courses at the 300 level or above, and 18 credits of the concentration courses must be selected from courses offered by the Departments of Biological Sciences (zoology); Fisheries, Animal and Veterinary Science; Food Science and Nutrition; Marine Affairs; and Natural Resource and Environmental Economics and by the Graduate School of Oceanography. Finally, the program requires 30-36 credits of supporting electives selected from an approved list of

courses in the Departments of Biological Sciences (botany and zoology); Fisheries, Animal and Veterinary Science; Food Science and Nutrition; Marine Affairs; Natural Resource and Environmental Economics; and Natural Resources Science and by the Graduate School of Oceanography.

Dietetics

The major in dietetics, offered by the Department of Food Science and Nutrition, is approved by the American Dietetic Association (ADA) and is required of students planning to become Registered Dietitians. This program is designed to provide the student with an academic background in clinical, community, and administrative dietetics. Students are encouraged to use supporting elective and free elective courses to study disciplines related to the field.

The major requires a minimum of seven credits in professional introductory courses in food science and nutrition: a minimum of 22 credits in basic science courses including introductory chemistry, organic chemistry, biochemistry, human anatomy, human physiology, and microbiology; a minimum of 34 credits in required concentration courses that cover the areas of advanced nutrition, nutrition and disease, nutrition education, nutrition in the life cycle, and food service management; and a minimum of 18 credits in supporting electives selected from an approved list of courses. Students are encouraged to see an academic advisor as soon as possible to discuss specific degree requirements.

After completing the Bachelor of Science requirements, the student can qualify for the professional title of Registered Dietitian, R.D., by completing experience requirements and passing a national examination. The experience requirements can be met by completing one of the following programs: an ADA-accredited dietetic internship program available to students on a competitive basis in major health care facilities nationwide; or an ADA-approved PreProfessional Practice Program (AP4) available to students on a competitive

basis in health care facilities and colleges and universities nationwide. The Department of Food Science and Nutrition has an ADA-approved AP4 program to which graduates of the dietetics program can apply.

Experience programs may be combined with graduate programs in universities leading to an advanced degree. Students completing academic and experience requirements become eligible to take the national registration examination administered through the Commission of Dietetic Registration of the ADA.

Environmental Management

The major in environmental management, offered by the Department of Natural Resources Science, prepares undergraduate students for professional careers in the public and private sectors of natural resources management. Flexible course requirements allow students to develop individual areas of concentration and prepare for a variety of positions in environmental management after graduation. This major is also suitable for students who wish to become certified as teachers of environmental science and natural resources at the secondary level. In addition, the program provides a solid background for graduate study in several more specialized environmental science disciplines. Environmental management majors may meet the educational requirements for state and federal employment as biologists, natural resource specialists, environmental scientists, and other classifications.

The major requires nine credits of introductory professional courses, which include natural resource conservation, resource economics, and introductory soil science. As part of the basic science requirements, environmental management majors must complete four credits in general botany, four credits in general zoology, three credits in introductory ecology, four credits in introductory physics, four credits in physical geology, four credits in inorganic chemistry, four credits in organic chemistry, three credits in introductory cal-

culus, and three credits in introductory statistics. Required concentration courses (24-26 credits) must be taken at the 300 level or above: at least 18 credits must be selected from the Department of Natural Resources Science. (Please note that internships, seminars, and special projects may not be counted toward the concentration.) In addition, two courses must be selected from each of the following groups: forestry and wildlife management, soil science, and water resources. The remaining concentration credits should be selected from the Department of Natural Resources Science or from an approved list of courses. Supporting electives (23-25 credits) must be selected from an approved list of courses mostly at the 300 and 400 levels.

Food Science and Nutrition

This major prepares students for professional or technical careers in food science and nutritional science. This program offers several academic possibilities, and students should choose the direction that challenges and excites their interests. Students are urged to engage in individually designed special projects and internships to gain experience and expertise in the field.

Food science is the application of science and technology to the processing, preservation, and distribution of food. It is the key to converting raw food materials into a wide variety of preserved and processed foods. It deals with the processing of existing food supplies to ensure their quality and safety, developing new food products and preserving food to feed a rapidly increasing world population, and improving the nutritional level of diets throughout the world. It is possible to complete minimum educational standards for food science as officially recognized by the national Institute of Food Technologists. Students choosing this direction are encouraged to focus on career opportunities such as quality assurance, research and development, fermentation technology, and seafood technology.

Nutritional science is the study of the action and interaction of nutrients and other substances in food in relation to health and disease. The body's requirements for nutrients are also studied, along with the social, economic, cultural, and psychological implications of food and eating. Students choosing this direction should consider focusing on nutrition and exercise or on research, or use it as preparation for medical school.

The major requires a minimum of six credits in general nutrition and introductory food science; six to seven credits in animal biology and physiology; eight credits in general chemistry; seven credits in organic chemistry and biochemistry; and four credits in microbiology. The concentration courses include three credits in advanced human nutrition, two credits in computer applications in food science and nutrition, three credits in food sanitation, and 12 additional credits based on the student's interest. Also required are courses in statistical methods in research, technical writing, and applied foods. An additional 24-25 credits are selected from an approved list of courses, mostly at the 300 and 400 levels. There are 12 credits of free electives.

Plant Science

Continued growth of the human population and associated environmental changes present formidable challenges to the continued supply of quality food, fiber, and renewable energy sources. Regional and local constraints imposed by the encroachment of a growing urban society into agricultural and natural ecosystems present continual challenges to identify an acceptable balance between economic and environmental concerns. Well-educated plant scientists are needed to meet these challenges. This major provides students with a strong foundation in basic plant biology as preparation for graduate-level training to pursue careers in research or education or, alternatively, as preparation for employment in technical support positions in plant-related academic or industrial research programs and in commercial plant biotechnology. Instruction in the traditional areas of plant structure and function, genetics, physiology and biochemistry, pathology, ecology, and taxonomy is available. Offerings in entomology provide a strong background for understanding and managing natural parasites and predators of plants as well as pest biocontrol strategies. While providing a general education in the plant sciences, the major allows for specialization in the biology of plant communities, symbiology, and plant molecular biology. The program in biology of plant communities provides a balanced study of plant-dominated ecosystems ranging from natural plant communities to constructed landscapes to intensely managed agroecosystems. The program in symbiology focuses on the interactions between plants and biotic and abiotic factors in the environment, including how plants respond to those influences from the whole plant level to the cellular and molecular level. The program in plant molecular biology incorporates basic training in genetic engineering and molecular biology to prepare the student for a research or technical support career in plant genetics or agricultural biotechnology.

The major requires 20-28 credits in the basic sciences; 30 credits in foundation courses required of all students in the major; 15 credits in concentration courses; 9-20 credits in supporting electives selected from an approved list of courses in biochemistry, botany, chemistry, computer science, microbiology, natural resources science, plant science, statistics, and zoology; and 9-12 credits in free electives. Advisors should be consulted early to ensure that programs are tailored to the specific needs and interests of the individual student.

Resource Economics and Commerce

This major provides students with a broad education focused on resource economics, economics, and natural resources sciences. Students are prepared to pursue

a wide variety of careers in the public and private sectors. In the private sector, careers can focus on the production, marketing, and distribution of natural resource commodities such as fisheries and agricultural products, timber, and petroleum, or on recreation and tourism. The major can also prepare the student for working with the conservation and management of natural resources at the state and national levels, for advanced professional programs in community or urban planning or law, or for graduate study in resource and agricultural economics.

REN 105 and NRS 100 are prerequisites for this major, which requires a total of 125 credits. Ten credits in basic sciences are required, including four credits in general chemistry and six credits in general biology. Fifteen credits are required in supporting sciences including three credits in computer science and six credits in mathematics, physics, genetics, plant physiology, population biology, introductory ecology, microbiology, general and organic chemistry or physical geology. The remaining six credits in supporting sciences can be selected from courses in applied biology, oceanography, mathematics, chemistry, computer science, or statistics. Introductory calculus is strongly suggested. Twenty-four credits in concentration courses are required at the 300 level or above, including 15 credits in resource economics and three credits in microeconomic theory.

Thirty-one credits are required in supporting electives, which must include six credits in communication skills. The student's total program of study must include at least six credits in communication studies. This requirement can be satisfied with either the General Education requirement for English communication or the supporting electives requirement for communication skills. The remaining credits in concentration courses and supporting electives should be selected in consultation with a faculty advisor.

Students have considerable flexibility in choosing courses in the College of Resource Development and other colleges at

the University. All students are required to take sufficient course work in the physical and biological sciences to gain familiarity with the resource area in which they are interested.

Students interested in water resources, for example, would select appropriate courses from natural resources science and chemistry. Students interested in fisheries marketing and trade should select course work in business, fisheries science and technology, and food science and nutrition. Students intending to pursue graduate studies in resource economics or economics should select course work in economic theory, mathematics, and statistics.

Soil and Water Resources

The major in soil and water resources, offered by the Department of Natural Resources Science, is designed to meet the growing demand for training in the science and management of land and water resources. Options in soil science and water resources provide in-depth training in specific, career-related disciplines.

Soil Science Option. This option is concerned with the soil system as a natural body. It deals with the physical, chemical, biological, and morphological properties of soils, and their relationship to soil-related land use activities. With proper course selection, students are eligible for professional certification by the American Society of Agronomy and the Soil Science Society of America. Soil science students learn the practical application of soils information through courses in soil and water analysis, soil conservation and land use, and soil conservation technology. The soil science option provides a strong background for work in state and federal regulatory agencies or consulting firms addressing land use or environmental contamination issues. Training in soil science also provides excellent preparation for graduate study.

This option requires nine credits of professional courses, which include natural resource conservation, resource economics, and introductory soil science. As part . of the basic science requirements, soil science students must complete four credits in general botany, four credits in general zoology, three credits in introductory ecology, four credits in introductory physics, four credits in physical geology, four credits in geomorphology, four credits in inorganic chemistry, four credits in organic chemistry, three credits in introductory calculus, and three credits in introductory statistics. Required concentration courses (29-33 credits) include at least 15-16 credits selected from soil morphology practicum, soil conservation and land use, soil and water conservation technology, soil morphology and mapping, plant nutrition and soil fertility, soil-water relations, fate of organic chemicals in soils and sediments, microbial ecology of soils and sediments, and soil genesis and classification; eight to 10 credits (courses not selected from those listed above may also be used in this category) must be taken from GIS methods in environmental management, wetland ecology, wetlands and land use, hydrology and water management, or hydrogeology; and six to seven credits must be selected from introduction to forest science, fundamentals of forest management, agricultural plant science, aboriculture, or vegetable science. Supporting electives (13-17 credits) must be selected from approved lists or from remaining concentration electives.

Water Resources Option. This option provides a broad background in the basic biological and physical sciences as well as instruction in the principles of managing water for all human benefits. While the option is designed to prepare students for employment or graduate study in the field of water resources, flexibility in course selection permits students to develop individual areas of concentration and to qualify for employment in other natural resources fields. The option is intended for those interested in wetland ecology, forest hydrology, water resource planning, and water pollution abatement.

This option requires nine credits of introductory professional courses, which include natural resource conservation, re-

source economics, and introductory soil science. As part of the basic science requirements, water resources students must complete four credits in general botany, four credits in general zoology, three credits in introductory ecology, four credits in introductory physics, four credits in physical geology, four credits in geomorphology, four credits in inorganic chemistry, four credits in organic chemistry, three credits in introductory calculus, and three credits in introductory statistics. Required concentration courses include at least 15 credits selected from wetland ecology, wetlands and land use, soil and water conservation technology, hydrology and water management, fate of organic chemicals in soils and sediments, microbial ecology of soils and sediments, water in the environment, hydrogeochemistry, hydrogeology, and limnology; the remaining credits must be selected from wetland wildlife management, GIS methods in environmental management, soil conservation and land use, soil morphology and mapping, soil-water relations, water pollution microbiology, phycology, advanced hydrogeology, or aquatic entomology. Supporting electives (14-15 credits) must be selected from approved lists or from remaining concentration electives.

Urban Affairs

The major in resource development in the urban environment is offered through the Department of Community Planning and Area Development in the College of Resource Development as part of the interdisciplinary Urban Affairs Program (see page 32). It provides students with an understanding of how human and natural resources pertain to urban affairs. Training deals with problems related to natural resources in contemporary society. With the help of advisors, students may develop individual programs flexible enough to accommodate their varying interests.

The major requires three credits of introductory work in urban affairs and 15 additional credits selected from courses approved for this level. Basic science require-

ments include six to eight credits in animal and plant biology, four credits in general chemistry, four additional credits in chemistry, physics, or natural science, and three credits in algebra/trigonometry. In the concentration, the major prescribes four groups of courses and the minimum credits required for each group. Eighteen of these credits will apply to the Urban Affairs Program core requirement. Supporting electives will be selected from recommended courses including 18 credits in resources science or management, nine credits in social sciences, nine credits in communication, and 15-17 credits in free electives.

Urban Horticulture and Turfgrass Management

The major in urban horticulture and turfgrass management is intended to educate students in the sciences, both natural and social, in preparation for professional careers in the many fields of environmental horticulture. Graduates of this program may pursue careers as landscape contractors; golf course superintendents; directors of park systems and arboreta; proprietors of garden centers and floral shops; plant propagators; nurserymen; vegetable and fruit growers; technical representatives for seed, equipment, and chemical companies; managers of lawn service firms; and horticultural therapists, to name some of the opportunities available. Others may enter graduate school and pursue careers in research and education in both public and private institutions. This program has as its unifying theme the culture and use of plants that enhance the human environ-

Depending on the area of specialization, graduates can meet the standards of several certification organizations. Graduates specializing in turfgrass management qualify for certification as turfgrass managers or turfgrass specialists with the American Registry of Certified Professionals in Agronomy, Crops, and Soils, Ltd. (ARPACS), of the American Society of Agronomy. These same graduates also

meet the requirements for registration with the Golf Course Superintendents Association of America. Graduates specializing in horticulture therapy qualify for registration with the American Horticultural Therapy Association.

The major requires 24-25 credits of preprofessional courses, including six in General Education; 21-24 credits in concentration courses; 39-43 credits in supporting electives selected from approved course lists in the student's area of interest with permission of the advisor; and 12 credits of free electives. Most supporting electives are at the 300 or 400 level, but certain lower-level courses may be acceptable if approved by an advisor. Included among these electives are business and management courses in the Department of Natural Resource and Environmental Economics, as well as advanced offerings in plant science, botany, and soil science.

Wildlife Biology and Management

The major in wildlife biology and management, offered through the Department of Natural Resources Science, prepares students for professional careers in the public and private sectors of wildlife biology. In addition, the major provides a solid background for graduate study. Wildlife biologists are professionals concerned with the scientific management of the earth's wildlife species and their habitats. Wildlife biologists work in the areas of preservation, conservation, and management of wildlife species. Graduates can become Certified Wildlife Biologists (CWBs) who are recognized by the Wildlife Society, an international professional organization. In addition, wildlife majors meet the educational requirements for state and federal employment in the wildlife profession.

The major requires nine credits of professional courses, which include natural resource conservation, resource economics, and introductory soil science. As part of the basic science requirements, wildlife majors must complete four credits in general botany, four credits in general zoology, three credits in introductory ecology, four credits in introductory physics, four credits in physical geology, four credits in inorganic chemistry, four credits in organic chemistry, three credits in introductory calculus, and three credits in introductory statistics. Required concentration courses (22-23 credits) include: three credits in introductory forestry; three credits in principles of wildlife management; four credits in field botany and taxonomy; six to seven credits in field ornithology, biology of mammals, vertebrate biology, or animal behavior; three to four credits in fundamentals of forest management, wetland wildlife management, wetland ecology, or fishery science; and three credits in either wildlife biometrics or introduction to computing. Supporting electives (26-27 credits) must be selected from approved lists and include the following upper-division course work: three credits in botany; three credits in zoology; six credits in resource policy or administration, environmental law, or land use planning; and six credits in communications.

GRADUATE ADMISSION AND REGISTRATION

Persons holding the baccalaureate degree and wishing to take graduate-level courses at the University may do so through admission to the Graduate School.

Admission

Students may be admitted to the Graduate School as degree candidates or they may pursue postbaccalaureate work in nonmatriculating status (see page 105). Admission to the Graduate School is based on academic qualifications and potential without regard to race, sex, religion, age, color, creed, national origin, disability, or sexual orientation, and without discrimination against disabled and Vietnam era veterans.

A package of self-managed application materials can be obtained from the Graduate Admissions Office, University of Rhode Island, Quinn Hall, Kingston, RI 02881. Zip code should be included in the applicant's return address. Inquiries concerning particular degree programs or courses of instruction should be addressed to the appropriate department chairperson or to the graduate program director, as listed in the "Graduate Programs" section of this bulletin.

The completed application package must be sent directly to the department or program to which admission is sought. Final decision on admission rests with the Dean of the Graduate School, who, after considering the recommendation of the department concerned, will notify the applicant of the decision.

Where admission to a doctoral program is possible for those holding the bachelor's degree and meeting other requirements, the Graduate School reserves the right to offer admission only to the master's program while postponing a decision on admission to the doctoral program until at least a substantial portion of the master's work has been completed.

Applications must be accompanied by a nonrefundable application fee: \$30 for in-state and \$45 for out-of-state residents (for residency requirements, see page 17). Simultaneous application to more than one department requires duplicate applications and credentials and separate application fees.

The completed application package and all supporting documents must be received by April 15 for summer admission, July 15 for fall admission, and November 15 for spring admission. The application package must be received by February 1 for consideration for financial aid for the following year. As indicated in the "Graduate Programs" section in this bulletin, certain programs admit students only for the fall semester or have earlier deadlines. There is no assurance that applications completed after specified deadlines will be processed in time for enrollment in the desired semester. Admission is valid only for the term offered and must be reconsidered if a postponement is subsequently requested.

International Applicants. Applicants from foreign countries must complete the Test of English as a Foreign Language (TOEFL) with a minimum score of 550 unless a higher minimum is listed under the admission requirements for the specific program. Self-administered international application forms can be obtained from the Graduate Admissions Office. The completed application package must be returned directly to the department or program to which admission is sought. Applications not received by February 1 for fall admission and July 15 for spring admission will be considered for the next admission period. Inquiries from international students concerning



nonimmigrant visas, transfers, funding, etc., should be sent to the Office of International Students and Scholars. Inquiries concerning housing should be sent to the Department of Housing and Residential Life (for apartments on campus) or to Off-Campus Housing (for rooms, apartments, and houses in the nearby community).

Transfer Credit. Transfer credit can be requested for graduate work taken at other accredited institutions of higher learning. Such credits may not exceed 20 percent of the total credits required for the program. Doctoral candidates holding a master's degree in the same or a closely related area can request up to 30 credits. The transfer work must have been taken at the graduate level (equivalent to the 500 level or higher in the University of Rhode Island course-numbering system) and a passing grade earned at that institution. It must have been completed not more than five years prior to the date of request for transfer into a master's program (ten years for the doctoral program) and must have a clear and unquestioned relevance to the student's program of study. The request for transfer credit should be accompanied by a proposed program of study and must

1995–96 Calendar for Graduate Degree Candidates

Fall Semester 1995

August 28, Monday

Deadline for international students to arrive on campus.

October 6, Friday

Final date for nominations for January graduation.

October 10-13

Currently enrolled matriculated graduate students may pick up advance registration materials for spring 1996 from the Registrar's

October 16-November 24

Currently enrolled matriculated graduate students may register for spring 1996 by telephone anytime after their earliest time to reg-

November 15, Wednesday

Deadline for applications for spring 1996, except for programs with earlier deadlines.

December 12, Tuesday

Programs of study due for students admitted for fall 1995.

December 15, Friday

Final date for January candidates to submit completed master's and doctoral theses in a form acceptable for examination purposes along with the request for oral defense of

thesis. NO EXTENSIONS OF TIME WILL BE GRANTED. Theses must be submitted at least 20

calendar days prior to the date requested for oral defense. Selection of date should allow sufficient time for necessary revisions and retyping before submission in final form. See January 16 deadline and note at the end of calendar on page 105 regarding scheduling examinations during the winter intercession.

Spring Semester 1996

January 16, Tuesday

Final date for January degree candidates to submit, in final form, master's and doctoral theses which have been successfully defended. NO EX-TENSIONS OF TIME WILL BE GRANTED.

February 1, Thursday

Final date for admissions applications from individuals seeking financial aid for 1996. Applications for financial aid received subsequent to this date cannot be assured of full consideration.

February 15, Thursday

Final date for nominations from departments and applications for fellowships and scholarships.

February 19, Monday

Final date for nominations for May graduation and for submission of annual review of doctoral candidates.

April 5, Friday

Final date for May degree candidates to submit completed master's and doctoral theses in a form acceptable for examination purposes, along with the request for oral defense of thesis. NO EXTENSIONS OF TIME WILL BE GRANTED. Theses must be submitted at least 20 calendar days prior to the date requested for the oral defense. Selection of date should allow sufficient time for necessary revisions and retyping before submission in final form. See deadline below.

April 15, Monday

Application deadline for summer 1996 admissions, except for programs with earlier deadlines.

May 1, Wednesday

Classes end, Kingston Campus. Programs of study due for students admitted in January 1996.

May 6, Monday

Final date for all May degree candidates to submit, in final form, master's and doctoral theses which have been successfully defended. NO EXTENSIONS OF TIME WILL BE GRANTED.

May 18, Saturday Graduate Commencement.

have the approval of the student's major professor and the Dean of the Graduate School. If transfer credit is desired for work taken elsewhere after a graduate student is enrolled at the University, prior approval must be obtained from the Dean of the Graduate School.

Degree Candidates. Applicants must forward the completed self-managed application package, containing all of the requested materials, directly to the department to which admission is being sought. Where required, test scores in the appropriate nationally administered tests should be sent directly to the department by the testing service. Tests required for specific programs can be found in the section "Graduate Programs." Scores (GRE, MAT,

or GMAT) earned more than five years prior to the term of application will not be accepted. If test results exceed the fiveyear limit, applicants must retake the examination.

To be accepted as graduate degree candidates, applicants must have maintained an average of approximately B (3.00 on a 4.00 scale) or better in their undergraduate work. For programs that require standardized tests, students must also have satisfactory scores on the appropriate nationally administered test. Applicants with undergraduate averages below the B level may possibly be admitted with submission of other evidence of academic potential; i.e., satisfactory performance in postbaccalaureate work, professional experience as evidenced by publications or letters of recommendation, and/or high scores in the standardized tests referred to above. All students are expected to maintain a cumulative average of B (3.00) or better. Students who do not maintain a cumulative B average will have their status reviewed and may be placed on provisional status or be dismissed. A student placed on provisional status must achieve a cumulative B average within one semester (or nine credits, if part-time) or be subject to dismissal.

Advanced Standing. A maximum of 12 credit hours of work taken at the University of Rhode Island in nonmatriculating status may be applied toward degree requirements if the student is later admitted to a degree program, but only with the recom-

1996 Summer Session for Graduate Degree Candidates

NOTE: All courses taken by graduate students during summer sessions are subject to the same regulations regarding inclusion in programs of study and calculation of overall academic average, etc., as courses taken during the regular academic year. Students wishing to take directed studies or special problems courses during summer sessions must obtain individual approval for these courses from the Summer Session Office unless the specific offering is listed in the Summer Session Bulletin for that year. Students wishing to enroll for thesis or dissertation research during summer sessions must first determine that their major professors and/or members of their thesis or dissertation committees will be available and are willing to provide the necessary supervision. See also the important note at the end of this calendar regarding scheduling of examinations, including defense of theses, during summer session. See the Summer Session Bulletin available at the Summer Session Office.

June 7, Friday

Final date for nominations for August graduation.

July 12, Friday

Final date for all August degree candidates to submit completed master's and doctoral theses in a form acceptable for examination purposes, along with the request for oral defense of the thesis. NO EXTENSIONS OF TIME WILL BE GRANTED. Theses must be submitted at least 20 calendar days prior to the date requested for the oral defense. Selection of date should allow sufficient time for necessary revisions and retyping before submission in final form. See August 9 deadline.

July 15, Monday

Deadline for fall 1996 applications, except for programs with earlier deadlines.

August 9, Friday

Final date for all August degree candidates to submit, in final form, master's and doctoral theses which have been successfully defended. NO EXTENSIONS OF TIME WILL BE GRANTED.

August 29, Thursday

Deadline for international students to arrive on campus.

IMPORTANT NOTE: Requests for scheduling examinations must be submitted to the Graduate School Office at least 20 calendar days prior to the date(s) requested. Theses and dissertations must be distributed to members of the examining committee at least 15 days prior to the date of the defense. Oral and written examinations, including qualifying and comprehensive examinations and defense of theses, will be scheduled only at the convenience of the faculty members involved and depending on the availability of the candidate's program committee and additional qualified examiners. Such ex-

aminations will not be scheduled during periods when the University is in recess. Students wishing to take any examinations should first check as to the availability and convenience of the faculty members. Each faculty member must initial the request for scheduling the examination to indicate willingness to serve. The faculty should be consulted well in advance for examinations being scheduled during the winter intercession and summer sessions. If they are not registered for course work or research during the summer sessions. students should register for one credit of research to defend theses and for continuous registration to take the other examinations. Please note that persons on continuous registration do not have the privilege of consulting regularly with professors on research or thesis preparation, nor of using the University's laboratory, computer, or other educational facilities (except for the libraries).

mendation of the student's program committee and the approval of the Dean of the Graduate School. Advanced standing for work taken at another institution must also be included within this limit. The request should be accompanied by a proposed program of study and satisfy the time constraints listed for transfer credit.

In certain cases, applicants who have been denied admission may be advised to take several courses in nonmatriculating status (see following paragraphs) to provide a basis for later reconsideration of their applications. In such cases, these courses are usually regarded as if they were entrance deficiencies and are not accepted for advanced standing in minimum-credit programs of study.

Nonmatriculating Status. Individuals holding a bachelor's degree who are not candidates for an advanced degree may take courses during the academic year or in the summer in nonmatriculating status. Normally, to take courses for personal satisfaction or professional advancement, postbaccalaureate students enroll in the College of Continuing Education. Any nonmatriculated student wishing to take courses on the Kingston Campus must file an application with the Office of the Registrar. If nonmatriculated students later wish to be admitted to a degree program, they must complete the regular admission procedure.

Nonmatriculated students do not have the privileges regularly enjoyed by degree

candidates. For example, on the Kingston Campus they may not register until one week before classes begin and must make payment before accessing the telephone registration system. Their enrollment is subject to the accommodation of degree candidates wishing to take these courses. In addition, there is a limit to the number of courses taken in this status that may be used as advanced standing to satisfy degree requirements. Nonmatriculated students are not eligible for financial aid.

Registration

The responsibility for being properly registered rests with the student. Students must complete their registration within the time period announced by the University

in the Schedule of Courses. The chairperson of the student's major department will assign an advisor to assist the new graduate student in planning a program. All students must register for courses through the Office of the Registrar in order to be properly enrolled.

Early Registration. Matriculated (official degree-seeking) students who meet the eligibility requirements as defined in the Schedule of Courses generally register in April and October for the following semester. The Schedule of Courses is available at the Office of the Registrar.

Summer Session. Although some graduate-level courses are offered during the summer sessions, the University does not guarantee that any particular course will be offered. The availability of individual faculty members to supervise research or to participate in comprehensive examinations and in examinations in defense of theses or dissertations during the summer sessions varies from year to year. During the summer sessions, special arrangements must be made with both the Graduate School and the department for scheduling comprehensive examinations and thesis or dissertation defenses. Graduate students must make prior individual arrangements for taking directed studies or special problems courses.

Time Limit and Continuous Registration. Graduate students are expected to complete their course work and research within the four-year time limit prescribed for the master's degree and the seven-year time limit for the doctorate.

The time limit for a degree program may be extended by applying to the Dean of the Graduate School for legitimate reasons such as military service or serious illness. This request requires the endorsement of the student's graduate program director or department chairperson.

Graduate students must remain continuously enrolled-except for summer sessions, which are optional—until they have completed all requirements and have received their degree. Students who wish to

maintain graduate status but do not require use of any University resources and are not registered for course work or research and are not on a leave of absence approved by the department and the Dean of the Graduate School must pay the continuous registration fee each semester until the degree has been awarded.

Students who are on a leave of absence or are on continuous registration do not have the privileges of consulting regularly with faculty on research or thesis preparation, nor of using laboratory, computer, or other educational facilities at the University. Students on continuous registration are not eligible for continuation of educational loan deferments based on student status.

A student who does not register for a semester, or obtain approval for a leave of absence, will be considered as having voluntarily withdrawn from the University. Students who are later permitted to reenroll must pay the continuous registration fee for each semester in which they did not maintain graduate status.

Full-Time and Part-Time Students. Minimum full-time registration is nine credit hours during a regular semester and six credit hours during a summer session. Maximum registration of 15 credit hours during a regular semester and eight credits during each summer term may not be exceeded without prior written permission of the Dean of the Graduate School, based on extraordinary circumstances. (Students on graduate teaching and research assistantships are limited to a maximum of 12 credits.) Credits in excess of 15 will be billed at the per-credit rate. Full-time registration is required of all international students and of all students holding fellowships, assistantships, full scholarships, and traineeships administered by the University.

Credits Earned Off Campus. Students who wish to register for credits to be counted toward a degree, and who will be earning these credits through off-campus activities such as research or independent study at a national laboratory, are required to obtain prior approval from the Dean of the Graduate School and to have these activities listed as part of their programs of study.

Intellectual Opportunity Plan (Pass-Fail Option). To allow graduate students to venture into new areas of knowledge without fear that their scholastic average will suffer, the Graduate Council has approved the Intellectual Opportunity Plan. (Please note that courses below the 400 level are automatically excluded from the scholastic average.) To be eligible for this option, the student's major professor or advisor must certify that the course or courses are outside the student's major field of study, are not entrance deficiencies, and are not specific requirements of, but are relevant to, the student's program. A maximum of four credits may be taken by the master's degree candidate and a maximum of eight credits, including any taken as a master's candidate, by the doctoral candidate. Deadlines appropriate for participation in this plan are published in the Schedule of Courses.

Late Registration, Schedule of Courses, Payment of Fees, Drop and Add, Auditing, Veterans Administration Educational Benefits, Transcripts, Change of Address, Required Identification. See "Undergraduate Admission and Registration."

GRADUATE PROGRAM REQUIREMENTS



ach advanced degree awarded by the University requires as a minimum the successful completion of a specified number of approved credits of graduate study at the University and the passing of prescribed examinations. Credit hours for a master's or doctoral degree may include formal course work, independent study, research, preparation of a thesis or dissertation, and such other scholarly activities as are approved by the candidate's program committee and the Dean of the Graduate School.

It is the student's responsibility to know the calendar, regulations, and pertinent procedures of the Graduate School and to meet its standards and requirements. These are set forth in this bulletin, the Graduate Student Manual, the Statement on Thesis Preparation, and other publications, all of which are available to graduate students at the Graduate School Office. These documents are also available in some department offices. The student manual is available at the library and, for a fee, at commercial centers in Kingston.

These documents govern both master's and doctoral degree programs. The student manual gives detailed information on

responsibilities of major professors and program committees, examination procedures, preparation of theses and dissertations, academic standards, and the Graduate Student Academic Appeals System.

The requirements immediately following are general requirements for all graduate students. Specific requirements for individual programs are itemized in the section "Graduate Programs."

Program of Study

The purpose of the program of study is to ensure that students, at an early stage in their graduate study, organize coherent, individualized plans for their course work and research activities. It is expected that the successful completion of students' programs of study along with collateral readings, research, etc., will enable them to demonstrate that they have achieved the high level of competence required of graduate students in their respective fields.

All degree candidates are required to prepare a program of study with the guidance of their major professors (for master's degree programs) or of their program committees (for doctoral programs) in accordance with the guidelines in the *Graduate Student Manual*. After the program has been approved by the major professor for master's degree candidates or by the program committee for doctoral candidates, the program of study is submitted for approval to the Dean of the Graduate School.

Course Numbering System

All regular graduate courses are numbered at the 500 and 600 levels. All 900-level courses are special graduate courses for which no graduate program credit is given. Courses numbered at the 400 level are for advanced undergraduates, but may, with approval and to a limited extent, be accepted toward meeting degree requirements at the master's level. For doctoral candidates who have completed the master's degree in the same field or one closely related, all program work must be at the 500 or 600 level.

Scholastic Standing

Graduate work is evaluated by letter grades. All grades earned will remain on the student's record, and unless the courses were approved for no program credit prior to registration, all unacceptable grades will be included in calculating the student's scholastic average.

A /grade of C+ (2.33) or lower in courses numbered at the 400 level is con-

sidered a failing grade. In such cases of failure the course must either be repeated, if it is a required course, or else replaced by another course approved by the candidate's program committee and the Dean of the Graduate School. When students receive more than one grade of C+ (2.33) or lower in courses at the 400 level, their graduate status is subject to review by the Dean of the Graduate School.

Grades of C- or lower are failing grades in courses at the 500 and 600 levels and require immediate review of the student's status. Students failing these courses must repeat them, if they are required courses, or else they must replace them with courses approved by the candidate's program committee and the Dean of the Graduate School.

The grades S (satisfactory) and U (unsatisfactory) are used for courses of study involving research undertaken for the thesis or dissertation and for certain courses and seminars so designated. The letter I (incomplete) is used for excused unfinished work. Incomplete grades assigned to graduate students may be removed within one calendar year. If the grade of I (incomplete) is not removed within one calendar year, it will remain on the transcript but may not be used for program credit. Grades of S, U, I, and all grades in courses below the 400 level are not included in the academic average.

To qualify for continuation of degree candidate status and for graduation, a cumulative average of B (3.00 on a 4.00 scale) in all work is required, except for courses meeting entrance deficiencies or approved for no program credit prior to registration in the course. At any time when the academic record indicates unsatisfactory performance, the student's status is subject to review. A student who fails to maintain a satisfactory quality point average or to make acceptable progress toward the degree may be dismissed as a graduate student.

Degree Requirements

Master's Degree. There are no major or minor area requirements for the master's degree. However, no degree can be awarded for the accumulation of credits without a planned and approved program of study. Courses for the degree are expected to be concentrated in the candidate's field of interest and related areas to produce a well-developed and coherent program.

Requirements for the master's degree must be completed within a period of four calendar years, or within a maximum of seven calendar years with special permission of the department and the Dean of the Graduate School if all of the study is done on a part-time basis. The master's degree may be earned through full- or part-time study, or a combination of the two. Candidates must take at least 80 percent of the credits required for the degree at the University of Rhode Island.

Some departments offer both a thesis and a nonthesis option, while others offer only one plan. Please refer to the "Graduate Programs" section for specific information on each program. The general requirements for these options are as follows.

Thesis Option. The minimum requirements for a master's degree are: 1) the successful completion of 30 credits, including six thesis research credits; 2) at the discretion of the department, the passing of written comprehensive examinations toward the end of the course work; 3) the submission of an acceptable thesis and the passing of an oral examination in defense of the thesis. Four copies of the thesis prepared in accordance with Graduate School requirements must be submitted to the Graduate School Office. A statement on the preparation of theses is available from that office.

Nonthesis Option. Depending on departmental requirements, some master's degrees may be earned without a thesis. The minimum requirements for a nonthesis master's degree program are: 1) the successful completion of a minimum of 30

credits; 2) completion of practicums, internships, or other experiences useful to the student's future professional career; 3) registration in one course that requires a substantial paper involving significant independent study; 4) the passing of a written comprehensive examination toward the end of the course work. Some departments may also require a final oral examination.

Research Competency. Although not normally required for the master's degree, a student's major professor or thesis committee may require proficiency in a foreign language, statistics, or computer science where appropriate for the subject chosen.

Professional Degrees. Students should refer to the specific program requirements for professional degrees and consult with the appropriate dean or director.

Doctor of Philosophy Degree. The Doctor of Philosophy degree must be completed within seven years of the date when the student first enrolled as a candidate.

The requirements for the doctoral degree are: 1) the completion of a minimum of 72 credits of graduate study beyond the baccalaureate degree, of which a minimum of 42 credits must be taken at the University of Rhode Island; 2) the passing of a qualifying examination; 3) if required by the department, proficiency in one or more foreign languages and/or in an approved research tool; 4) the passing of a comprehensive examination; 5) the completion of a satisfactory dissertation; 6) the passing of a final oral examination in defense of the dissertation; and 7) fulfillment of the residence requirement of maintaining full-time residence for at least two consecutive semesters while acquiring the last 42 credits for the degree, but prior to taking the doctoral comprehensive examinations. Residence is interpreted as full-time attendance (nine credits or more) on campus or in the College of Continuing Education during a regularly scheduled semester. Full-time registration for both terms of a summer session counts as one semester of residence. With the

exception of graduate assistants, instructors, research assistants, or the equivalent, no candidate for the doctorate may count part-time study toward satisfying this residence requirement unless a specific request for an exception, outlining the reasons and alternative method of satisfying the requirement, is approved by the candidate's doctoral committee and submitted together with the candidate's program of studies for the approval of the Dean of the Graduate School. The department in which the student studies for the doctoral degree may or may not require a master's degree preliminary to, or as part of, the regular course of study.

Qualifying Examination. This examination is intended to assess a student's potential to perform satisfactorily at the doctoral level. A student without a master's degree who is accepted as a doctoral candidate is expected to take a qualifying examination, usually after 24–30 credits have been completed. A student who holds a master's degree in the same or a closely related field is normally not required to take the examination. If an examination is required, it will be stipulated at the time of admission.

Research Competency. Each department, in cooperation with the Graduate School, is authorized to formulate and to amend its own requirements and methods of testing for competency in research tools such as foreign language(s), computer science, or statistics. The department may, in turn, delegate this responsibility to the program committee for each individual doctoral candidate.

Comprehensive Examination. Each doctoral candidate will take comprehensive examinations at or near but not later than 12 months after completion of the formal courses stipulated in the program of study. The examination is designed to assess the student's intellectual capacity and adequacy of training for scholarly research.

The comprehensive examination consists of two parts: written and oral. The student, with the approval of his or her

program committee, applies to the Graduate School to take the examination. The oral examination committee includes the student's committee and two additional members of the graduate faculty appointed by the Dean of the Graduate School. One of the additional members represents a field of study allied to that of the student's major. The candidate's major professor arranges for and chairs the examination. Unanimous approval by the examining committee is required for the passing of the comprehensive examination.

A candidate whose performance fails to receive unanimous approval may, with the committee's recommendation and the approval of the Dean of the Graduate School, be permitted one re-examination in the part or parts failed, to be taken no sooner than 10 weeks and no later than one year after the initial examinations.

Final Oral Examination. This examination is a defense of the dissertation and is open to all members of the faculty and, generally, to all students. The examination, usually a maximum of two hours, is conducted by an examining committee made up of the candidate's program committee and two additional graduate faculty members appointed by the Dean of the Graduate School. One of the appointed members will be designated by the Dean to chair the examination.

Unanimous approval of the examining committee is required for passing. If the candidate does not perform satisfactorily, the committee may recommend to the Dean of the Graduate School that the candidate take one re-examination under stated conditions.

Theses and Dissertations

For the oral defense, a sufficient number of completed copies of the thesis or dissertation, acceptable in form and substance to each member of the examining committee and the Dean of the Graduate School, is required. At least 20 calendar days prior to the proposed defense, the

copies must be submitted to the Graduate School for scheduling of the examination.

Following a successful defense, and after all changes and corrections have been made, four copies prepared in accordance with requirements of the Graduate School and the library must be submitted to the Graduate School Office. Doctoral candidates must submit an additional abstract, not exceeding 350 words.

Students are advised to consult the Statement on Thesis Preparation and Instructions for Thesis Defense, both available in the Graduate School Office, and the most recent edition of Kate L. Turabian's A Manual for Writers of Term Papers, Theses, and Dissertations, published by the University of Chicago Press.

GRADUATE PROGRAMS

raduate students who are interested in the career opportunities related to particular programs of study are encouraged to discuss their interests with the appropriate department chairperson or with the director of graduate studies, as listed in this bulletin, with the Dean of the Graduate School, or with the staff of Career Services. Students who are uncertain about their career choices are invited to use the services offered by the Counseling Center.

This section must be read in conjunction with the preceding "Graduate Admission and Registration" and "Graduate Program Requirements." The specific admission and program requirements listed in this section are included within the general requirements set forth in the preceding sections, and do not reduce those general requirements. For example, in nonthesis master's degree programs, all students must take at least one course that requires a substantial paper involving significant independent study. All Ph.D. candidates who do not hold an earned master's degree in a closely related field are required to take the Ph.D. qualifying examination even if it is not listed in the individual program requirements.

The admission requirement of standardized test scores (GRE, GMAT, MAT) is specific to the particular program. For programs that require a standardized test, applications will not be reviewed until the scores have been received. In all other cases, scores may be submitted if applicants believe the test results will enhance their application. However, the test results should be submitted as early as possible. If an application package is received before the test results, the admission decision may be made without the scores.

Please note that the specific program requirements given on the following pages are minimum requirements. For example, additional course credits may be required for individual candidates whose academic

background is considered to be insufficient. All courses, undergraduate and graduate, are described in the section "Courses of Instruction."

Successful completion of any course of study at the University does not guarantee that the student will find either a specific kind or level of employment.

The availability of programs of study and areas of specialization listed in this section, and their administrative location, requirements, and titles, are subject to change without notice.

Accounting

M.S. 401-792-2073

Graduate Faculty

Chairperson: Professor Henry R. Schwarzbach, D.B.A., 1976, University of Colorado; C.P.A. Director of Graduate Studies: Associate Professor Mark Higgins, Ph.D., 1989, University of Tennessee; C.P.A.

Professor Spencer J. Martin, Ph.D., 1970, University of Illinois; C.P.A.

Professor Joseph P. Matoney, Jr., Ph.D., 1973, Pennsylvania State University; C.P.A.

Professor Richard Vangermeersch, Ph.D., 1970, University of Florida; C.P.A., C.M.A.

Associate Professor Edmund J. Boyle, Ph.D., 1990, Pennsylvania State University; C.P.A. Associate Professor Marshall A. Geiger, Ph.D., 1988, Pennsylvania State University; C.P.A. Associate Professor Alejandro Hazera, D.B.A.,

1989, University of Kentucky; C.P.A.



Associate Professor Charles Hickox, L.L.M., 1994, Boston University Assistant Professor Judy K. Beckman, Ph.D., 1991, Texas Tech University; C.P.A.

Master of Science

The Master of Science in accounting program is appropriate for students with a variety of educational backgrounds and professional interests. The program has the objective of providing an accounting and business foundation for the student with an undergraduate degree in an area other than accounting. These students graduate with a strong theoretical understanding of accounting along with the necessary technical background. They are equipped to perform exceedingly well in entry-level positions in accounting. The objective for students with undergraduate degrees in accounting is to provide a fifth year of conceptual, theoretical, and technical education in accounting, finance, management science, and other areas where the student and program director feel the student can gain the most toward achieving his or her educational objectives.

Applicants with a bachelor's degree in accounting from an accredited institution can complete the program of study in one year. Applicants with no prior education in business will need to spend two years in full-time study or longer if studying parttime. The course of study is divided into two parts. Part one is a common body of knowledge in business and accounting that is required for all students without a bachelor's degree in business. The student's undergraduate record is evaluated, and common body of knowledge courses are waived when a student has undergraduate equivalents. The second phase of the program allows the students to build on their accounting foundation and develop a high level of theoretical knowledge and a sound understanding of accounting principles and techniques. During the second part of the program the student selects an area in which to specialize. Two areas are available: 1) financial reporting and auditing, and 2) taxation.

Admission requirements: undergraduate quality point average of approximately B or above and a score at the 50th percentile or above on the GMAT examination are expected. The GMAT score and the undergraduate quality point average are not the sole criteria for admission. However, those with undergraduate quality point averages of less than B or with lower than 50th percentile scores on the GMAT have a reduced probability of admission. Applicants for whom English is not the native lanquage will be expected to demonstrate proficiency in written and oral communications (TOEFL score of 575 or above), or they may be required to correct deficiencies by taking selected courses for no program credit.

Program requirements: from 30 to 69 credits, depending on undergraduate program. A written comprehensive examination and a course requiring a major paper involving independent study are required in the nonthesis option.

All 600-level courses offered by the departments in the College of Business Administration are open to matriculated graduate students only.

Animal and Veterinary Science

See Fisheries, Animal and Veterinary Science.

Applied Mathematical Sciences

(Interdepartmental)

Ph.D.

401-792-5592

This interdepartmental program is sponsored by the Departments of Computer Science and Statistics, Industrial and Manufacturing Engineering, Management Science and Information Systems, and Mathematics. It is administered by a coordinating committee selected from the graduate faculty.

Coordinating Committee: Gerasimos Ladas (chairperson), Gerard M. Baudet, David L. Freeman, Leonard M. Kahn, Seetharama Narasimhan

Graduate Faculty

Professor Rodney D. Driver, Ph.D., 1960, University of Minnesota

Professor Norman J. Finizio, Ph.D., 1972, Courant Institute of Mathematical Sciences, New York University

Professor Edward A. Grove, Ph.D., 1969, Brown University

Professor R. Choudary Hanumara, Ph.D., 1968, Florida State University

Professor James F. Heltshe, Ph.D., 1973, Kansas State University

Professor Jeffrey E. Jarrett, Ph.D., 1967, New York University

Professor Barbara Kaskosz, Ph.D., 1977, Polish Academy of Sciences

Professor Russell C. Koza, Ph.D., 1968, Rensselaer Polytechnic Institute

Professor Gerasimos Ladas, Ph.D., 1968, New York University

Professor Edmund A. Lamagna, Ph.D., 1975, **Brown University**

Professor James T. Lewis, Ph.D., 1969, Brown University

Professor Pan-Tai Liu, Ph.D., 1968, State University of New York, Stony Brook

Professor Dennis W. McLeavey, D.B.A., 1972, Indiana University; C.P.I.M. (Fellow); C.F.A. Professor Richard Mojena, Ph.D., 1971, University of Cincinnati

Professor Seetharama Narasimhan, Ph.D., 1973, Ohio State University

Professor Lewis J. Pakula, Ph.D., 1972, Massachusetts Institute of Technology

Professor S. Ghon Rhee, Ph.D., 1978, Ohio State University

Professor Oved Shisha, Ph.D., 1958, Hebrew University

Professor Robert C. Sine, Ph.D., 1962, University of Illinois

Professor E. Ramnath Survanarayan, Ph.D., 1961, University of Michigan

Professor Donald W. Tufts, Sc.D., 1960, Massachusetts Institute of Technology

Professor Ghasi Ram Verma, Ph.D., 1957, Rajasthan University

Associate Professor Gerard M. Baudet, Ph.D., 1978, Carnegie Mellon University

Associate Professor Frank M. Carrano, Ph.D., 1969, Syracuse University

Associate Professor James G. Kowalski, Ph.D., 1975, University of Notre Dame

Associate Professor Bala Ravikumar, Ph.D., 1987, University of Minnesota

Associate Professor David M. Shao, Ph.D., 1970, State University of New York, Buffalo

Assistant Professor Nancy Eaton, Ph.D., 1992, **Emory University**

Assistant Professor Victor Fay-Wolfe, Ph.D., 1991, University of Pennsylvania

Assistant Professor Colleen Kelly, Ph.D., 1991, University of California, San Diego

Assistant Professor Joan Peckham, Ph.D., 1990, University of Connecticut

Assistant Professor Catherine Roberts, Ph.D., 1992, Northwestern University

Professor Emeritus Edward J. Carney, Ph.D., 1967, Iowa State University

Professor Emeritus Emilio O. Roxin, Ph.D., 1959, University of Buenos Aires

Specializations

Applied mathematics, applied probability, computer science, operations research, and statistics.

Doctor of Philosophy

Admission requirements: GRE with advanced test in undergraduate field; bachelor's degree in computer science, engineering, mathematics, management science, physical sciences, statistics, or equivalent. With permission, GMAT may be substituted for GRE by applicants with business background. Applicants with

entrance deficiencies may be accepted subject to taking certain undergraduate courses in addition to the graduate program requirements. Although a person with a bachelor's degree may be admitted, this program is designed principally for people who have a master's degree.

Program requirements: dissertation; 54 credits beyond the bachelor's degree including MTH 435, 436; two courses selected from MTH 462, 513, 515, 535, 545, 561, and 641; and three core courses in each of two of the following areas: applied mathematics, basic analysis, numerical analysis, computer science, operations research, statistics, and applied probability. (A maximum of 30 credits may be granted for a master's degree in a closely related area. In this case, 400-level courses cannot be counted for program credit.) Comprehensive examination in core areas and reading proficiency in one foreign language. The oral comprehensive examination should include a faculty member from the Mathematics Department. The Ph.D. qualifying examination is required of students admitted without the master's degree. All Ph.D. candidates must register full-time for two consecutive semesters prior to the Ph.D. comprehensive examination.

Also see the listing under Mathematics, page 133.

Applied Pharmaceutical Sciences

M.S., Ph.D. (Pharmaceutical Sciences) 401-792-2754

Graduate Faculty

Chairperson: Professor Thomas E. Needham, Ph.D., 1970, University of Rhode Island Professor Norman A. Campbell, Ph.D., 1972, University of Wisconsin Professor Serpil Kislalioglu, Ph.D., 1973, University of London Professor Joan M. Lausier, Ph.D., 1971, University of Rhode Island Professor Louis A. Luzzi, Ph.D., 1966, University of Rhode Island Professor Christopher T. Rhodes, Ph.D., 1964, Chelsea College, University of London

Professor Hossein Zia, Ph.D., 1969, University of Georgia

Associate Professor Sara Rosenbaum, Ph.D., 1980, University of Liverpool

Associate Professor Cynthia Willey Lessne, Ph.D., 1985, University of North Carolina, Chapel

Assistant Professor Susan Andrade, Sc.D., 1994, Harvard University

Adjunct Professor Niklos M. Breur, Ph.D., 1958, Weizmann Institute of Science, Israel Adjunct Assistant Professor Paul E. Larrat, Ph.D., 1992, Brown University

Specializations

Applied pharmaceutical sciences with emphasis on physical pharmacy, biopharmaceutics, pharmacokinetics, formulation and manufacturing of conventional and novel drug deliverysystems, and cosmetic products, drug standards, regulatory affairs, pharmacoepidemiology and pharmacoeconomics.

Master of Science

Admission requirements: GRE, bachelor's degree in pharmacy or equivalent, and CSC 201 or equivalent.

Program requirements: thesis; STA 409 or equivalent; BCH 435; APS 693, 694; nine credits of 500- or 600-level pharmaceutics courses. For the cosmetic science technology track, thesis; STA 409; BCH 435 or CHE 542; APS 530, 531, 532, 693, 694; and 10 credits of electives with one course selected from 500- or 600-level pharmaceutics courses.

Doctor of Philosophy (Pharmaceutical Sciences)

Admission requirements: same as for master's degree. Written and qualifying examinations are required of all candidates.

Program requirements: for pharmaceutical formulations and regulatory affairs, dissertation; M.S. core requirements plus APS 693, 694, IME 533; and comprehensive examination. In addition, for the pharmaceutical formulation track: CHE 530; six credits from CHM 512, MIC 533 and 552, FSN 447, APS 680, and CHM 511; and 10 additional credits of 500- or 600-level pharmaceutics courses. For the regulatory affairs

track: APS 535, 540, 621, 660, 670, 680, PCL 546, CHM 511; six credits from APS 622, 623, 631, 633, 640X, PED 564, MGT 630, MKT 601, MIC 533, 552.

For the pharmacoepidemiology and pharmacoeconomics track: 27 credits of core courses (APS 540, 550X, 640X, 651, 652, 680, 693, 694, STA 412, PSY 533 or STA 541); nine credits of concentration courses: 12 credits of electives: 24 credits of APS 699, qualifying examination, oral and written comprehensive examinations, and dissertation. Suggested concentrations include the improvement in quality of pharmaceutical delivery, pharmacoepidemiology, epidemiology, statistical analysis, nursing research, medical effectiveness, and health care administration. Tutorials may be arranged in areas of special interest to the student; students are expected to attend and participate in the departmental seminar (APS 693, 694) during their entire tenure in the Ph.D. program, for a maximum of three credits assigned to the core credit requirement.

Aquaculture

See Fisheries, Animal and Veterinary Science.

Audiology

M.A., M.S.

See Speech-Language Pathology.

Biochemistry

M.S., Ph.D. (Biological Sciences) 401-792-2201

Graduate Faculty

Chairperson and Director of Graduate Studies: Professor David C. Laux, Ph.D., 1971, University of Arizona

Professor Paul S. Cohen, Ph.D., 1964, Boston University

Professor Marian R. Goldsmith, Ph.D., 1970, University of Pennsylvania

Professor Karl A. Hartman, Jr., Ph.D., 1962, Massachusetts Institute of Technology

Professor Linda A. Hufnagel, Ph.D., 1967, University of Pennsylvania Professor David R. Nelson, Ph.D., 1979, University of California, Los Angeles

Professor Richard W. Traxler, Ph.D., 1958, University of Texas

Professor George C. Tremblay, Ph.D., 1965, St. Louis University

Associate Professor Terence M. Bradley, Ph.D., 1983, University of Idaho

Associate Professor Joel M. Chandlee, Ph.D., 1984, North Carolina State University Associate Professor William R. Krul, Ph.D., 1967, Purdue University

Associate Professor John P. Mottinger, Ph.D., 1968, Indiana University

Associate Professor Jay F. Sperry, Ph.D., 1974, University of Kansas

Assistant Professor Anthony S. Fischl, Ph.D., 1986, Rutgers—The State University Assistant Professor Joanna H. Norris, Ph.D., 1982, Michigan State University

Adjunct Assistant Professor Shashikant R. Mehta, Ph.D., 1984, University of Texas, Houston Professor Emeritus Victor J. Cabelli, Ph.D., 1951, University of California, Los Angeles

Professor Emeritus Norris P. Wood, Ph.D., 1955, University of Pennsylvania

Specializations

Neurochemistry of alcoholism, olfactory signal transduction, structure and function of receptors, protein phosphorylation, spectroscopic studies of the structures of nucleic acids and proteins, metabolism of nitrogenous constituents in mammalian tissues, regulation of metabolism, biochemical, molecular, and genetic analysis of plant mutants, biochemistry of salmonid parr-smolt transformation, synthesis of hepatic proteins.

Master of Science

Admission requirements: GRE and a bachelor's degree in some field of science or engineering including two semesters each in organic chemistry with laboratory, biological sciences, and calculus, and one semester in physics. Students may be accepted with deficiencies, which must be made up without program credit.

Program requirements for all M.S. candidates: BCH 435, 521, 541, 581, 582, one

credit of 695 or 696, and three credits in an additional 500-level course exclusive of special topics or research. All full-time students are expected to be continuously registered for BCH 695, 696 (Seminar), but no more than one credit can be used for program credit. Thesis option: a minimum of 24 credits (exclusive of thesis credits) including the above requirements and a thesis. Nonthesis option: a minimum of 36 credits including the above requirements, BCH 651 or 652, and the written master's examination.

Doctor of Philosophy (Biological Sciences)

Admission requirements: same as for master's degree candidates; M.S. degree not required to enroll in Ph.D. program. Qualifying examination required of all Ph.D. candidates.

Program requirements: BCH 435, 521, 541, 581, 582, a total of three credits in BCH 695, 696, at least six credits of additional BCH course work at the 500 level exclusive of special topics or research, comprehensive examination, and dissertation. All full-time students are expected to be continuously registered for BCH 695, 696 (Seminar), but no more than three credits can be used for program credit.

Botany

M.S., Ph.D. (Biological Sciences) 401-792-2161

Graduate Faculty

Chairperson: Professor Robert C. Bullock, Ph.D., 1972, Harvard University

Director of Graduate Studies: Assistant Professor Joanna F. Norris, Ph.D., 1982, Michigan State University

Professor Paul E. Hargraves, Ph.D., 1968, College of William and Mary

Professor Marilyn Harlin, Ph.D., 1971, University of Washington

Professor Keith T. Killingbeck, Ph.D., 1976, University of North Dakota

Professor Richard E. Koske, Ph.D., 1971, University of British Columbia Professor Theodore J. Smayda, Dr. Philos., 1967, University of Oslo

Professor Elijah Swift V, Ph.D., 1967, Johns Hopkins University

Associate Professor John P. Mottinger, Ph.D., 1968, Indiana University

Assistant Professor Alison W. Roberts, Ph.D., 1990, Texas Tech University

Adjunct Professor Paul S. Chomet, Ph.D., 1988, State University of New York, Stony Brook Adjunct Professor Albert P. Kausch, Ph.D., 1983,

lowa State University

Adjunct Associate Professor Susan L. Hammen-Winn, Ph.D., 1989, University of Rhode Island

Adjunct Associate Professor Glen D. Thursby,
Ph.D., 1983, University of Rhode Island
Adjunct Assistant Professor Jane N. Gemma,
Ph.D. 1987, University of Phode Island

Ph.D., 1987, University of Rhode Island Adjunct Assistant Professor Eric M. Roberts, Ph.D., 1991, University of Texas, Austin Professor Emeritus Roger D. Goos, Ph.D., 1958,

University of Iowa

Specializations

Aquatic botany (marine and freshwater), cell biology, genetics and cytogenetics, mycology, phycology, plant development, plant ecology, plant molecular biology, plant physiology.

Master of Science

Admission requirements: GRE and undergraduate major in the sciences. Candidates lacking undergraduate courses in organic chemistry, physics, mathematics through introductory calculus, and fundamental courses in biological sciences may be required to make up deficiencies without graduate credit.

The completed application package must be received by April 15.

Program requirements: thesis and BOT 581 or 582.

Doctor of Philosophy (Biological Sciences)

Admission requirements: same as for master's degree, which is normally required. Qualifying examination required for those accepted without the master's degree.

The completed application package must be received by April 15.

Program requirements: dissertation; BOT 581, 582. Comprehensive examination will require competency in major areas of botany.

Business Administration

M.B.A., Ph.D. 401-792-5000

Graduate Faculty

Interim Dean, College of Business Administration: Frank S. Budnick, D.B.A, 1973, University of Maryland

Director of Graduate Programs: Professor Richard W. Scholl, Ph.D., 1979, University of California, Irvine

Director of Ph.D. Program: Associate Professor Shaw K. Chen, Ph.D., 1988, University of Michigan

Accounting

Chairperson: Professor Henry R. Schwarzbach, D.B.A., 1976, University of Colorado; C.P.A. Professor Spencer J. Martin, Ph.D., 1970,

University of Illinois; C.P.A.

Professor Joseph P. Matoney, Jr., Ph.D., 1973, Pennsylvania State University; C.P.A. (Rhode Island)

Professor Richard Vangermeersch, Ph.D., 1970, University of Florida; C.P.A. (Rhode Island)

Associate Professor Edmund J. Boyle, Ph.D., 1990, Pennsylvania State University; C.P.A.

Associate Professor Marshall A. Geiger, Ph.D., 1988, Pennsylvania State University; C.P.A. Associate Professor Alejandro Hazera, D.B.A.,

1989, University of Kentucky; C.P.A. Associate Professor Mark Higgins, Ph.D., 1989, University of Tennessee; C.P.A.

Assistant Professor Judy K. Beckman, Ph.D., 1991, Texas Tech University; C.P.A.

Business Law

Professor Andrew Laviano, J.D., 1965, New York University School of Law

Associate Professor John Dunn, J.D., 1977, Boston College Law School

Associate Professor Charles Hickox, L.L.M., 1994, Boston University

Finance and Insurance

Chairperson: Associate Professor Gordon H. Dash, Jr., D.B.A., 1978, University of Colorado Professor Rosita P. Chang, Ph.D., 1982, University of Pittsburgh

Professor Dennis W. McLeavey, D.B.A., 1972, Indiana University; C.F.A.

Professor S. Ghon Rhee, Ph.D., 1978, Ohio State University

Associate Professor Gene C. Lai, Ph.D., 1987, University of Texas, Austin

Associate Professor Blair M. Lord, Ph.D., 1975, University of California, Davis

Associate Professor Henry R. Oppenheimer, Ph.D., 1979, Purdue University

Assistant Professor Yul Lee, Ph.D., 1986, University of Texas, Austin

Management

Chairperson: Professor Clay V. Sink, Ph.D., 1968, Ohio State University; C.A.M.

Professor Norman Coates, Ph.D., 1967, Cornell University

Professor Robert A. Comerford, Ph.D., 1976, University of Massachusetts

Professor George deLodzia, Ph.D., 1969, Syracuse University

Professor Craig E. Overton, Ph.D., 1971, University of Massachusetts

Professor Charles T. Schmidt, Jr., Ph.D., 1968, Michigan State University

Professor Richard W. Scholl, Ph.D., 1979, University of California, Irvine

Associate Professor Laura L. Beauvais, Ph.D., 1987, University of Tennessee

Associate Professor Elizabeth A. Cooper, Ph.D., 1985, University of Akron

Associate Professor Sanjiv Dugal, Ph.D., 1991, University of Massachusetts

Assistant Professor Linda M. Randall, Ph.D., 1993, University of Massachusetts

Management Science and Information Systems Chairperson: Professor Maling Ebrahimpour, Ph.D., 1986, University of Nebraska

Professor Charles P. Armstrong, Ph.D., 1973, University of Arizona

Professor Alan B. Humphrey, Ph.D., 1965, North Carolina State University

Professor Jeffrey E. Jarrett, Ph.D., 1967, New York University

Professor Chai Kim, Ph.D., 1973, University of Pittsburgh

Professor Russell C. Koza, Ph.D., 1968, Rensselaer Polytechnic Institute

Professor Paul M. Mangiameli, Ph.D., 1979, Ohio State University

Professor Richard Mojena, Ph.D., 1971, University of Cincinnati

Professor Seetharama Narasimhan, Ph.D., 1973, Ohio State University Associate Professor Roy Ageloff, Ph.D., 1975, University of Massachusetts

Associate Professor Shaw K. Chen, Ph.D., 1988, University of Michigan

Associate Professor Stuart Westin, Ph.D., 1983, University of Massachusetts

Marketing

Chairperson: Professor Albert J. Della Bitta, Ph.D., 1971, University of Massachusetts Professor Nikhilesh Dholakia, Ph.D., 1975, Northwestern University

Professor Ruby Roy Dholakia, Ph.D., 1976, Northwestern University

Professor Eugene M. Johnson, D.B.A., 1969, Washington University

Professor M. Ven Venkatesan, Ph.D., 1965, University of Minnesota

Associate Professor Carol F. Surprenant, Ph.D., 1981, University of Wisconsin

Assistant Professor Bari Harlam, Ph.D., 1991, University of Pennsylvania

Assistant Professor Deborah Rosen, Ph.D., 1992, University of Tennessee

Specializations

For the M.B.A.: finance, general management, international management, management science, and marketing.

For the Ph.D.: finance, management, management science, and marketing.

Master of Business Administration

The Master of Business Administration (M.B.A.) program prepares students for leadership positions in business, government, and nonprofit organizations. The faculty seeks to develop a global perspective while stressing the ethical and environmental responsibilities inherent in all management activities. The program is offered on the Kingston Campus for full-time students, and in the evening through the College of Continuing Education in Providence for part-time students. Full-time candidates may begin the program in the fall semester only. Part-time candidates may begin the program in the fall or spring semester.

In addition, an M.B.A. for Executives may be completed in 22 months. beginning in August, by participating in a program that meets on Fridays and Saturdays at the W. Alton Jones Campus. A group of 20–25 experienced managers (7–10 years

of management experience) follows a curriculum that emphasizes computer applications, human relations, organizational behavior, financial analysis, and other areas useful to the effective manager. Applicants should specify the M.B.A. program (full-time, part-time, executive) they wish to enroll in on the application.

Admission requirements: Graduate Management Admissions Test (GMAT), a statement of purpose, a resumé, three letters of recommendation, and transcripts of all previous undergraduate or postbaccalaureate work are required. Work experience is valued. Applicants for whom English is not the native language will be expected to score 575 or above on the TOEFL. The GMAT score and undergraduate quality point average are not the sole criteria for admission. However, those with undergraduate quality point averages of less than B or those with less than 50th percentile scores on the GMAT have a low probability of admission. Applications from well-qualified individuals who can contribute to the cultural and ethnic diversity of the College of Business Administration and of the University are welcome.

Program requirements: nonthesis program requires a minimum of 36 credits and a maximum of 54 credits. Of these, 11 credits are designated entry-level courses: ECN 590, BAC 500, 520, and 530. BAC 500, 520, and 530 may be waived upon successful completion of proficiency examinations administered by the Department of Management Science and Information Systems. These courses may also be waived with permission of the chairperson and program director based on recent successful completion of equivalent college-level courses at an AACSB-accredited institution. ECN 590 may also be waived based on recent completion of collegelevel courses in micro- and macroeconomics with grades of B or better. The 43-credit standard program is composed of 31 credits of required courses: ACC 610; BSL 600; FIN 601, 660; MGT 630, 681; MSI 600, 620, 640; MKT 601; plus 12 credits of electives. Of the required courses, the following may be waived

(with the recommendation of the appropriate chairperson and the M.B.A. program director, and the approval of the Dean of the Graduate School) based on significant prior college-level study in the appropriate field (usually multiple courses in the field from an AACSB-accredited program): ACC 610; BSL 600; MSI 600, 620; 640; MGT 630; and MKT 601. Of the 12 elective credits, no more than nine may be required in a single field of specialization. Students who do not wish to specialize may choose their electives with the prior approval of the M.B.A. program director and the Dean of the Graduate School.

For the specializations listed here, the courses indicated are either required or recommended, in addition to the required M.B.A. courses. Other electives may be used to complement the required courses, but such choices are subject to approval by the M.B.A. program director.

Students are encouraged to participate in internships, which include both practical and academic components. Arrangements must be made through an academic advisor and must include registration in the appropriate course; e.g., MGT 693, 694 Internship in Management. Placements may be arranged through various external organizations.

Finance (Coordinator: Professor Gene C. Lai). Students choose electives that emphasize corporate finance, investment management, international finance, speculative markets, or financial institutions. Requirements: FIN 641 and two electives chosen from FIN courses and ECN 538.

General management (Coordinator: Professor Clay V. Sink). Students go beyond the core management courses and study areas such as organizational behavior, theory, and development; human relations; labor relations; entrepreneurship; strategic management; and business law. Requirements: three electives selected from MGT or BSL courses, LRS 541, 542 or 543 (not both), and LRS 545.

International management (Coordinator: Professor Norman Coates). Students study the problems and processes of managing organizations in an interdependent, global

environment. Requirements: three electives selected from ECN 538; FIN 652; LRS/PSC 521; MGT 655, 656, and 657; and MKT 651. Students are encouraged to take supplemental interdisciplinary courses in the historical, cultural, social, political, economic, or linguistic differences in management. Those with appropriate levels of second-language proficiency are encouraged to take a business language course.

Management science and information systems (Coordinator: Professor Maling Ebrahimpour). Students select courses that examine information as an economic resource that can be managed, as can the more traditional resources such as labor, land, and capital. The department encompasses all aspects of managing information as a vital resource. This includes the technologies, mechanisms, methodologies, concepts, and issues involved in the effective acquisition, manipulation, analysis, evaluation, and presentation of information. Requirements: three MSI electives.

Marketing (Coordinator: Professor Albert Della Bitta). Students study essential elements of marketing beyond the fundamentals covered in the core marketing course. Electives are chosen from course offerings.

All 600-level courses offered by departments in the College of Business Administration are open to matriculated graduate students only.

Doctor of Philosophy

The Doctor of Philosophy program is small and highly selective. Admission is competitive and based on academic merit, research capabilities, and the match of research interests between the applicant and faculty in the indicated area of specialization.

Admission requirements: GMAT or GRE, and a master's degree. Applicants with diverse academic backgrounds are encouraged to apply.

Applicants are admitted for the fall semester only. Due to the selectivity of the programs, new admissions to the doctoral program must be limited to a small number each year. Since applicants are evalu-

ated for each of the four specialization areas independently, all applicants must specify a single area of specialization on the application form. Completed application package must be received by March 1; applications received after that date are reviewed on a space-available basis until the programs are full, and are not guaranteed a full review.

Applicants for whom English is not the native language will be expected to score 575 or above on the TOEFL. The GMAT and GRE scores and master's quality point average are not the sole criteria for admission. However, those with master's quality point averages of less than 3.20 on a 4.00 point scale or those who score lower than the 60th percentile on the GMAT or GRE have a low probability of admission. The average master's quality point average for current doctoral candidates is 3.60, and their GMAT scores average in the top 20th percentile.

Program requirements: during the qualifying phase of the program, entering doctoral students must take four written qualifying examinations. These written examinations are scheduled in accounting, financial economics, behavioral science, and decision science. One or more of these examinations may be waived for a student on the basis of course work taken in the last five years.

The advanced study phase includes a minimum of 32 credit hours of advanced course work in the area of specialization, in supporting and connected areas, and in research methodology and techniques. Course work during this phase may include seminars, directed studies, research projects, and field work deemed appropriate for the student's area of specialization. All Ph.D. candidates must include BUS 601 and 602 in their programs of study. Each student is required to write at least three major papers of publishable quality. This phase culminates in a written comprehensive examination covering the student's area of specialization as well as research methods and statistics.

After passing the comprehensive examination, doctoral candidates enter the dissertation research phase and engage in significant research under the supervision of their major professor and the doctoral committee. Doctoral dissertation research is expected to make a major contribution to the state of knowledge in the candidate's field. The dissertation defense is a final oral examination administered according to procedures established by the Graduate School.

The Department of Management Science and Information Systems is also a sponsor of the Ph.D. program in applied mathematical sciences (see page 111).

General Information

In addition to the University's Academic Computer Center, business students have access to four other computer facilities: the Dennis W. Callaghan Microcomputer Laboratory, the Computer-Integrated Manufacturing Laboratory, the college's general computer facility, and a smaller computer laboratory at the College of Continuing Education (see page 7). These facilities are available to both daytime and evening students six days a week.

Chemical Engineering

M.S., Ph.D. 401-792-2655

Graduate Faculty

Chairperson: Professor Vincent C. Rose, Ph.D., 1964, University of Missouri; P.E.

Director of Groduate Studies: Professor Stanley M. Barnett, Ph.D., 1963, University of Pennsylvania

Professor Arijit Bose, Ph.D., 1981, University of Rochester

Professor Richard Brown, Ph.D., 1977, University of Cambridge

Professor Otto Gregory, Ph.D., 1982, Brown University

Professor Harold N. Knickle, Ph.D., 1969, Rensselaer Polytechnic Institute

Chester H. Kirk Professor Angelo Lucia, Ph.D., 1981, University of Connecticut

Professor Thomas I. Rockett, Ph.D., 1963, Ohio State University

Associate Professor Donald J. Gray, Ph.D., 1980, University of Rhode Island

Assistant Professor Mercedes Rivero-Hudec. Ph.D., 1986, University of Pennsylvania Adjunct Assistant Professor Everett Crisman, Ph.D., 1984, Brown University Professor Emeritus Joseph Estrin, Ph.D., 1960, Columbia University

Specializations

Biochemical engineering: reactors, purification methods, degradation, and chemical production.

Environmental engineering: separation methods, heavy metal removal, hazardous waste minimization, and desalination.

Food engineering: membrane processes.

Materials engineering: corrosion and erosion, electronic materials processing, ceramic processing polymer films, conducting polymers and phase equilibria.

Transport phenomena: crystal growth, nucleation from solution, interfacial and colloidal phenomena, filtration, flow through porous media, multiphase fluid mechanics, and diffusion through poly-

Energy engineering: analysis of energy systems, multiphase flow and coal liquefaction.

Unit operations: crystallization, mixing, chromatography, electrodialysis, ultrafiltration and microfiltration.

Process simulations: design and optimization of multiphase separation systems.

Master of Science

Admission requirements: bachelor's degree in chemical engineering; candidates from other engineering fields or from mathematics, biology, chemistry, or physics may be accepted into the program with possible addition of prerequisite courses.

Program requirements: thesis option-CHE 501, 502. Nonthesis option for parttime students, with permission of the chairperson; master's examination and comprehensive report with oral examination.

Doctor of Philosophy

Admission requirements: M.S. degree in engineering (may be waived for University of Rhode Island graduate students who

pass the qualifying examination with superior performance).

Program requirements: candidate's program will be determined in consultation with his or her committee and will be based on his or her background and career goals. A comprehensive examination is required to complete the program. There is no general language requirement, but a student's committee may require a foreign language or research tool that may be necessary for the candidate's program. In addition to an acceptable dissertation, a candidate must submit a manuscript, based on his or her research, suitable for publication in a technical journal. CHE 501, 502 is also required.

Chemistry

M.S., Ph.D. 401-792-2318

Graduate Faculty

Chairperson: Professor Wilfred H. Nelson, Ph.D., 1962, University of Minnesota

Professor Elie Abushanab, Ph.D., 1965, University of Wisconsin

Professor Christopher W. Brown, Ph.D., 1967, University of Minnesota

Professor Phyllis R. Brown, Ph.D., 1968, Brown University

Professor Joel A. Dain, Ph.D., 1957, Cornell University

Professor William B. Euler, Ph.D., 1979, Florida State University

Professor James L. Fasching, Ph.D., 1970, Massachusetts Institute of Technology

Professor Harold W. Fisher, Ph.D., 1959, University of Colorado

Professor David L. Freeman, Ph.D., 1972, Harvard University

Professor Louis J. Kirschenbaum, Ph.D., 1968, **Brandeis University**

Professor Raymond P. Panzica, Ph.D., 1972, University of Utah

Professor William M. Rosen, Ph.D., 1967, University of California, Riverside

Professor Yuzuru Shimizu, Ph.D., 1962, Hokkaido University

Professor Daniel D. Traficante, Ph.D., 1962, Massachusetts Institute of Technology Professor Bruno M. Vittimberga, Ph.D., 1957,

University of Illinois

Professor Sze Cheng Yang, Ph.D., 1973, Columbia University

Associate Professor Cynthia G. Zoski, Ph.D., 1985, Trent University

Professor Emeritus Paul I. Abell, Ph.D., 1951, University of Wisconsin

Specializations

Analytical chemistry: electrochemistry, vibrational spectroscopy, high-performance liquid chromatography, laser spectroscopy, chemometrics.

Inorganic chemistry: light scattering, low-dimensional conductors, solution kinetics, macrocyclic complexes, metal oxidation states.

Organic chemistry: molecular recognition, heterocycles, synthesis, electron transfer, marine natural products, polymers, structural analysis.

Physical chemistry: molecular spectroscopy, theoretical chemistry, conducting polymers, statistical mechanics, smart materials.

Master of Science

Admission requirements: GRE only for graduates of non-U.S. universities, with advanced test strongly recommended. Preference is given to candidates with undergraduate majors in chemistry or chemical engineering with mathematics through

Program requirements: placement examination to determine specific program requirements and successful completion of master's qualifying examinations. For thesis option (31 credits), 12 credits of graduate core courses in at least three of the four areas of chemistry; one additional graduate-level course in chemistry; CHM 642 or 643; and thesis. For nonthesis option (36 credits), 18 credits of graduate core courses; CHM 642 or 643, CHM 551, 552; and a written comprehensive examination.

Doctor of Philosophy

Admission requirements: same as for master's degree.

Program requirements: successful completion of qualifying examination; 15 credits of graduate core courses; one additional graduate-level course in chemistry; and CHM 642-644 (3 credits). Comprehensive examination and dissertation.

Civil and Environmental **Engineering**

M.S., Ph.D. 401-792-2692

Graduate Faculty

Chairperson: Professor Daniel Urish, Ph.D., 1978, University of Rhode Island; P.E.

Director of Graduate Studies: Associate Professor George E. Veyera, Ph.D., 1985, Colorado State University

Professor William D. Kovacs, Ph.D., 1968, University of California, Berkeley; P.E.

Professor Kang W. Lee, Ph.D., 1982, University of Texas, Austin; P.E.

Professor Everett E. McEwen, D.Eng., 1964, Rensselaer Polytechnic Institute

Professor Calvin P. Poon, Ph.D., 1964, University of Illinois: P.E.

Professor Armand J. Silva, Ph.D., 1965, University of Connecticut; P.E.

Professor Raymond M. Wright, Ph.D., 1981, Pennsylvania State University; P.E.

Associate Professor Dimitrios Karamanlidis, D.Eng., 1979, Technical University of Berlin Associate Professor Alan S. Marcus, Ph.D., 1969, University of Massachusetts

Associate Professor Leon T. Thiem, Ph.D., 1982, University of Missouri; P.E.

Associate Professor George Tsiatas, Ph.D., 1984, Case Western Reserve University

Adjunct Professor Thomas E. Wright, M.S.E., 1975, West Virginia University; P.E.

Adjunct Associate Professor Michael C. Apostal, Ph.D., 1974, State University of New York, Buffalo

Adjunct Associate Professor Robert B. Shaw, M.S., 1966, Purdue University; P.E. Adjunct Assistant Professor Diane L. Badorek, Ph.D., 1982, University of Missouri; P.E.

Specializations

Environmental engineering: water supply and treatment facilities, municipal and industrial waste treatment, flocculation and coagulation of wastes, solid waste and hazardous waste management, modeling of environmental systems, groundwater pollution, groundwater exploration, coastal groundwater, nonpoint source pollution, stormwater management, river and estuary hydrology, hydraulics and water quality.

Geotechnical engineering: geoacoustic modeling and properties of marine sediments, sediment sampling, in-situ testing, deep-sea sedimentary processes, sediment transport, creep processes, environmental geotechnology, dredge material disposal, experimental geomechanics, soil-structure interaction, constitutive modeling of geological materials, particulate mechanics, applications of nonlinear finite element and discrete element methods to geomechanics problems, earthquake engineering, wave propagation in granular media, dynamic soil properties, liquefaction, geosynthetics.

Structural engineering: matrix and finite element analysis, computer and numerical methods, deterministic and stochastic structural dynamics, earthquakes, vibration control of buildings, system identification, structural reliability, hysteretic structures, fatigue, design of steel and concrete structures, marine structures, structural stability, thin-walled structures, coastal structures, deterministic and stochastic structural dynamics, structural reliability, vibration control, earthquakes, soil-structure interaction, condition assessment and rehabilitation of

Transportation engineering: properties of pavement materials, pavement theory and design, pavement management system, highway location, and geometric design. For master's level only: traffic operation and control, transportation cost, transportation supply and demand analysis, and transportation system analysis.

Master of Science

Admission requirements: bachelor's degree in civil or environmental engineering. Candidates in other engineering fields or in mathematics, biology, chemistry, or physics may be accepted with the possibility of additional undergraduate prerequisite courses being required.

Program requirements: thesis or nonthesis option. Thirty credits plus CVE 601, 602 except for part-time students. Nonthesis option requires comprehensive technical report and written comprehensive examination.

Doctor of Philosophy

Admission requirements: master's degree in civil or environmental engineering or in a related field.

Program requirements: 24 credits including the two-course minor outside the candidate's area of specialization, where required by the candidate's committee; comprehensive examination; and dissertation. Although there is no formal departmental language requirement, the candidate's committee may require proficiency with a research tool or in a foreign language.

Clinical Laboratory Science

M.S. 401-792-2205

Graduate Faculty

Chairperson: Professor David C. Laux, Ph.D., 1971, University of Arizona Director of Graduate Studies: Gregory E. Paquette, Ph.D., 1992, University of Rhode Island

Professor Norman A. Campbell, Ph.D., 1972, University of Wisconsin

Professor Albert H. Taubman, Ph.D., 1971, University of Pittsburgh

Professor George C. Tremblay, Ph.D., 1965, St. Louis University

Associate Professor John Boulmetis, Ph.D., 1982, Ohio State University

Associate Professor Jay F. Sperry, Ph.D., 1974, University of Kansas

Adjunct Professor Charles Seymour, Ph.D., 1975, Cornell University

Adjunct Professor Michael Sheff, Ph.D., 1957, Sheffield University

Adjunct Professor Kurt Stottmeier, Ph.D., 1962, University of Berlin

Adjunct Associate Professor Barbara E. Barker, Ph.D., 1965, University of Rhode Island

Adjunct Associate Professor Julia E. Blazek-D'Arezzo, Ph.D., 1982, University of Rhode

Adjunct Associate Professor Jacob A. Canick, Ph.D., 1972, University of Rhode Island

Adjunct Associate Professor Steven Opal, M.D., 1976, Albany Medical College Adjunct Assistant Professor Edward Balkovic, Ph.D., 1984, Baylor College of Medicine Adjunct Assistant Professor Edward Drozda,

M.B.A., 1989, Bryant College Adjunct Assistant Professor Judith S. Heelan, Ph.D., 1982, University of Rhode Island Adjunct Assistant Professor Margaret Kenney,

M.S., 1983, University of Massachusetts, Dartmouth

Adjunct Assistant Professor Leonard LaFazia, M.S., 1984, Salve Regina University Adjunct Assistant Professor Anthony J.

Lewandowski, M.S., 1985, University of Massachusetts, Dartmouth Adjunct Assistant Professor Kenneth Mayer,

M.D., 1977, Northeastern University Adjunct Assistant Professor Frank Meglio, M.S., 1980, Northeastern University

Specializations

Major specializations in clinical chemistry, cytopathology, clinical microbiology, hematology, immunohematology; minor specializations in adult education and management.

Master of Science

Admission requirements: GRE recommended; bachelor's degree in clinical laboratory sciences, life sciences, physical sciences, or health sciences (for cytopathology, must include 20 semester hours of biological sciences, including anatomy and physiology, and eight semester hours of chemistry); certification, or certification eligibility, by a nationally recognized certifying agency, or a minimum of one year's postbaccalaureate laboratory experience. One course in statistics is required. Applicants with deficiencies in background courses may be required to complete appropriate course work without graduate

Program requirements: BCH 551, EDC 505, 582, 583 or 584, MTC 510, 512, 513, and nine to 24 credits in the area of specialization (ASP 534, MTC 502 and 543 for clinical chemistry; ASP 534, MTC 501 and 541 for clinical microbiology; MTC 520, 521 and 530 for hematology and immunohematology; MTC 561 through 566 for

cytopathology). The remainder of courses are to be selected from education, management, or other specializations for a total of 33 credits (39 credits for cytopathology). Comprehensive written examination. Major research paper. The following courses are recommended for a minor specialization in health-care management: APS 651, 652, and 680. The following courses are recommended for a minor specialization in adult education: four courses selected from EDC 505, 529, 582, 583, and 584.

Community Planning and Area Development

Chairperson: Professor Marcia Marker Feld,

M.C.P. 401-792-2248

Graduate Faculty

Ph.D., 1973, Harvard University Director of Graduate Studies: Associate Professor Farhad Atash, Ph.D., 1985, Rutgers-The State University Associate Professor Marshall M. Feldman, Ph.D., 1981, University of California Associate Professor Howard H. Foster, Jr., Ph.D., 1970, Cornell University Associate Professor Marjorie E. Jensen, M.S., 1978, University of Rhode Island Adjunct Professor Cynthia M. Hamilton, Ph.D., 1980, Boston University Adjunct Professor Benjamin H. Stevens, Ph.D., 1959, Massachusetts Institute of Technology Adjunct Professor Carol J. Thomas, M.S., 1948, University of Connecticut Adjunct Associate Professor David H. Abedon, M.A., 1972, University of Rhode Island Adjunct Associate Professor Thomas E. Deller, M.C.P., 1979, University of Rhode Island Adjunct Associate Professor Kevin M. Flynn, M.C.P., 1980, University of Rhode Island Adjunct Associate Professor Glenn R. Kumekawa, M.A., 1956, Brown University Adjunct Associate Professor Kenneth Payne,

M.C.P., 1973, University of Rhode Island

M.C.P., 1981, University of Rhode Island

Adjunct Associate Professor Samuel J. Shamoon,

M.C.P., 1970, University of Rhode Island

Adjunct Associate Professor Peter D. Ruggiero,

Adjunct Associate Professor Robert Shaw, M.S.C.E., 1966, Purdue University Adjunct Associate Professor, David R. Wescott, M.C.P., 1979, University of Rhode Island Adjunct Assistant Professor Elizabeth Burke Bryant, J.D., 1985, George Washington University Adjunct Assistant Professor Mark Motte, M.C.P., 1986, University of Rhode Island Adjunct Assistant Professor Mary Parella, M.C.P., 1989, University of Rhode Island Adjunct Assistant Professor Daniel J. Schatz, J.D., 1978, University of Maine Adjunct Assistant Professor Mark Tigan, M.P.A., 1972, San Jose University

Adjunct Assistant Professor David S. Winsor,

M.C.P., 1980, University of Rhode Island

Specializations

The curriculum educates and trains planners for professional positions in community planning and development agencies in both the public and the private sectors. A core of study in theory and substantive methods relating to urban or urbanizing communities is required. In addition, four specializations are offered: environmental planning and land use, urban design and physical planning, housing and community development, and social policy planning.

The specialization in environmental planning and land use focuses both on planning of the built environment and on concern for the impact of development on the natural environment. The specialization in urban design and physical planning emphasizes the significant role urban (community) design plays in the overall planning process and the relation of that design to other functional areas in comprehensive planning; i.e., land use, transportation, and economic development. The specialization in housing and community development integrates economic, social, and political theories of development with methods and policies to improve living conditions in communities through housing and economic development. The social policy planning specialization emphasizes the elements of social structure and social characteristics that form the imperatives for policy in city planning.

Master of Community Planning

Admission requirements: GRE; the undergraduate background areas preferred are the social sciences, architecture, landscape architecture, natural resources, engineering, and geography. Competency in statistical methods is required and may be demonstrated by having completed an acceptable course at the undergraduate or graduate level. This course does not count for graduate credit. Undergraduate courses in computer science and microeconomics are recommended but not required for admission to the program. The degree is accredited by the Planning Accreditation Board and is offered through the New England Regional Program.

Program requirements: the 54-credit program consists of 36 credits of required core courses, six credits of CPL 589 and 599, and 12 credits of courses in the specialization area. Students must select a specialization area by the end of their first semester of study, and must complete a four-course sequence in the area of specialization and a comprehensive examination covering the core and the area of specialization. CPL 510, 512, 522, 523, 526, 630, and 631 are required. CPL 501, 511, and 525 will also be required unless proficiency has been demonstrated by previous course work. A summer internship or equivalent experience is required. The following courses are required in the specialization areas. Environmental planning and land use: CPL 545 and three courses from CPL 537, 538, 539, 549, REN 534, MAF 521, and NRS 410. Urban design and physical planning: CPL 530 and three courses from CPL 516, 536, 538, 545, 546, 555, and CVE 442 and 446. Housing and community development: CPL 624 and three courses from CPL 540, 541, 542, 555, and 625. Social policy planning: CPL 624 and three courses from CPL 543, 625, LRS 546, and ECN 404. Other acceptable courses may be substituted for the electives where appropriate. Students normally take 12-15 credits per semester to complete degree requirements in two years.

Dual-Degree Program: Master of Community Planning (URI) and Juris Doctorate (Roger Williams University of Law)

A cooperative dual-degree program offered at the University of Rhode Island and Roger Williams School of Law permits joint enrollment leading to an M.C.P. and J.D. The integrated program of the two degrees allows a student to complete both programs in four years instead of the five required if both degrees were pursued separately.

Admission requirements: GRE and other requirements listed for URI Graduate School and requirements listed for RWU School of Law. Applicant must apply and be accepted to both programs and must indicate the M.C.P./J.D. as the field of specialization.

Program requirements: each student must complete the core requirements of each program. RWU School of Law will accept 15 M.C.P. credits as transfers toward the total of 90 required credit hours in law. **URI's Department of Community Planning** and Area Development will accept 11 law credits as transfers toward the total of 56 credits. A total of 120 credits is required to complete the dual-degree program. Each student must file separate programs of study and pass the exit requirements of each degree.

Comparative Literature Studies

M.A. 401-792-5911

Graduate Faculty

Coordinator: Professor Robert C. Manteiga, Ph.D., 1977, University of Virginia

Department of English Professor Josie P. Campbell, Ph.D., 1972, Pennsylvania State University Professor Lois Cuddy, Ph.D., 1975, Brown University Professor Wilfred P. Dvorak, Ph.D., 1972, Indiana University

Professor John R. Leo, Ph.D., 1972, North-

western University

Professor Daniel D. Pearlman, Ph.D., 1968, Columbia University

Associate Professor Gitahi Gititi, Ph.D., 1990, University of Minnesota

Assistant Professor Jean Walton, Ph.D., 1988, State University of New York, Buffalo

Department of Modern and Classical Languages and Literatures

(Classical) Associate Professor Ann Suter, Ph.D., 1984, Princeton University

(French) Associate Professor Ira A. Kuhn, Ph.D., 1970, University of Kansas

(French-Linguistics) Professor Kenneth H. Rogers, Ph.D., 1970, Columbia University (Italian) Professor Paschal Viglionese, Ph.D., 1969, Rutgers—The State University

(Italian) Associate Professor Wallace P. Sillanpoa, Ph.D., 1980, University of Connecticut (Portuguese) Professor Gregory R. McNab, Jr.,

Ph.D., 1973, New York University (Russian) Professor Sona Aronian, Ph.D., 1971, Yale University

(Spanish) Professor Robert C. Manteiga, Ph.D., 1977, University of Virginia

(Spanish) Professor Mario Trubiano, Ph.D., 1979, University of Massachusetts

(Spanish) Associate Professor Thomas D. Morín, Ph.D., 1975, Columbia University (Spanish) Associate Professor Clement A. White, Ph.D., 1987, Brown University

Specializations

English language literatures (American, British, Irish) and Classical, French (including Quebecois and Black French literature), German, Italian, Portuguese, Russian, Spanish, Latin American, Caribbean, and Pan-African literatures.

Master of Arts

Admission requirements: B.A. degree; formal training or demonstrable competence in literature; high level of proficiency in one foreign language.

Program requirements: first literature, nine credits; second literature, six credits (one of the literatures may be English); CLS 510; electives pertinent to a student's program of study to be approved by the major professor and advisory committee; reading knowledge of a second foreign language; comprehensive examination. For thesis option, thesis and 24 credits. For nonthesis option, 30 credits, including six

credits of independent study resulting in the production of extended essays.

Computer Science

401-792-2701

Graduate Faculty

Chairperson: Professor Edmund A. Lamagna, Ph.D., 1975, Brown University Director of Graduate Studies: Professor Gerard M. Baudet, Ph.D., 1978, Carnegie Mellon University

Associate Professor Frank M. Carrano, Ph.D., 1969, Syracuse University

Associate Professor James G. Kowalski, Ph.D., 1975, University of Notre Dame

Associate Professor Bala Ravikumar, Ph.D., 1987, University of Minnesota

Assistant Professor Victor Fay-Wolfe, Ph.D., 1991, University of Pennsylvania

Assistant Professor Joan Peckham, Ph.D., 1990, University of Connecticut

Adjunct Associate Professor Charles M. Strauss, Ph.D., 1969, Brown University

Adjunct Assistant Professor Robert A. Ravenscroft, Jr., Ph.D., 1991, Brown University

Adjunct Assistant Professor Robert V. Rubin, Ph.D., 1988, Brown University

Professor Emeritus Edward J. Carney, Ph.D., 1967, Iowa State University

Specializations

Analysis of algorithms, artificial intelligence, computer architecture, programming languages, theory of computation, databases, operating systems, distributed computing, expert systems, graphical user interfaces, software engineering, symbolic and algebraic computation, VLSI systems, numerical analysis, statistical computation, simulation, computer-aided education.

Master of Science

Admission requirements: bachelor's degree, including undergraduate training in computer science at least through the syntax and semantics of a variety of programming language types, machine and assembly language concepts, fundamentals of data structures and algorithms. Mathematics through linear algebra, calculus of several variables, and discrete mathematics. GRE. Advanced GRE in computer science or a related field desirable.

Program requirements for thesis option:

1) a minimum of 24 credits (exclusive of thesis) and a thesis; 2) at least 15 credits must be earned at the 500 level or above;

3) at least 18 credits must be from computer science courses; 4) completion of at least six credits in one of the following areas and three credits in each of the other two: architecture and systems—CSC 511, 512, 517; mathematical foundations—CSC 541, 542, 544; programming languages—CSC 501, 502.

Program requirements for nonthesis option: 1) a minimum of 30 credits, including at least one course with a substantial paper involving significant independent research; 2) at least 21 credits must be earned at the 500 level or above; 3) at least 24 credits must be from computer courses; 4) completion of at least six credits in each of two of the following areas and three credits in the third: architecture and systems—CSC 511, 512, 517; mathematical foundations—CSC 541, 542, 544; programming languages—CSC 501, 502; 5) passing a written comprehensive examination.

Doctor of Philosophy

See Applied Mathematical Sciences on page 111.

Economics — Marine Resources

See Resource Economics.

Education

M.A., Ph.D.

MASTER OF ARTS 401-792-2564

Graduate Faculty

Chairperson: Professor Theodore Kellogg, Ph.D., 1971, Florida State University Director of Graduate Studies: Professor Robert W. MacMillan, Ph.D., 1966, University of Texas, Austin

Professor Barbara Brittingham, Ph.D., 1973, Iowa State University

Professor William Croasdale, Ed.D., 1966, Teachers College, Columbia University Professor Theodore Kellogg, Ph.D., 1971, Florida State University

Professor John V. Long, Jr., Ph.D., 1971, Syracuse University

Professor Robert W. MacMillan, Ph.D., 1966, University of Texas, Austin

Professor William L. McKinney, Ph.D., 1973, University of Chicago

Professor Richard F. Purnell, Ph.D., 1966, University of Texas

Professor Francis X. Russo, Ph.D., 1964, Boston University

Professor George H. Willis, Ph.D., 1971, Johns Hopkins University

Associate Professor John Boulmetis, Ph.D., 1982, Ohio State University

Associate Professor David M. Byrd, Ph.D., 1980, Syracuse University

Associate Professor Richard G. Nelson, Ph.D., 1972, University of Wisconsin

Associate Professor Richard E. Sullivan, Ph.D., 1971, University of Texas, Austin

Associate Professor Susan L. Trostle, Ed.D., 1984, Pennsylvania State University. Associate Professor Betty Young, Ph.D., 1988,

University of California, Los Angeles Assistant Professor James F. Barton, Ph.D., 1990, Stanford University

Assistant Professor Sandy J. Hicks, Ph.D., 1993, University of Arizona

Assistant Professor Alora Valdez, Ph.D., 1992, University of Arizona

Professor Emeritus Marguerite Bumpus, Ed.D., 1969, University of Massachusetts

Specializations

Students seeking the Master of Arts degree must declare an area of specialization. A specialization may be one predefined by the department or designed in accordance with the student's background and interest. Defined specializations include:

Adult education: administration, adult literacy, Education, Training, and Management (ETMS), gerontology, training and development, and vocational education.

Elementary education: advanced study for elementary teachers; an option for stu-

dents seeking initial certification in elementary teaching is also available.

Reading education: reading teacher certification, literacy education, and reading supervision.

Secondary education: advanced study for secondary teachers of English; history, languages, mathematics, science, and social studies; an option for students seeking initial certification in these areas is also available.

Admission Requirements

MAT or GRE and a faculty interview are required. Individuals seeking to undertake the initial certification options in elementary and secondary education are expected to have a substantial academic background in the field of interest. For foreign students, a TOEFL score of 600 is required.

Program Requirements

Individuals may choose the thesis or nonthesis option. Required are 30 credits including a required core of six credits (a foundation and a research methodology course); two electives (six credits), and an academic specialization (18–24 credits). The nonthesis option requires a written comprehensive examination and at least one designated course with a substantial paper involving significant independent research.

Teacher certification option: students who wish to pursue the initial teacher certification option of the elementary or secondary specializations take 19–34 additional credits. Students may obtain certification prior to completing the requirements for the M.A. For teacher certification, also see page 148.

DOCTOR OF PHILOSOPHY (Joint with Rhode Island College) 401-792-2244

Graduate Faculty

Co-Director of Graduate Studies: Professor William L. McKinney, Ph.D., 1973, University of Chicago Professor Barbara Culatta, Ph.D., 1975,

University of Pittsburgh

Professor Marcia Marker Feld, Ph.D., 1973, Harvard University

Professor Theodore M. Kellogg, Ph.D., 1971, Florida State University

Professor John V. Long, Jr., Ph.D., 1971, Syracuse University

Professor Richard F. Purnell, Ph.D., 1966, University of Texas

Professor Robert Sonstroem, Ph.D., 1968, University of Minnesota

Professor George H. Willis, Ph.D., 1971, Johns Hopkins University

Associate Professor David M. Byrd, Ph.D., 1980, Syracuse University

Associate Professor David Caruso, Ph.D., 1985, Cornell University

Associate Professor Diane Horm-Wingerd, Ph.D., 1985, Virginia Polytechnic Institute and State University

Associate Professor Susan L. Trostle, Ed.D., 1984, Pennsylvania State University

Associate Professor W. Grant Willis, Ph.D., 1984, University of Georgia

Associate Professor Betty Young, Ph.D., 1988, University of California, Los Angeles

Assistant Professor James F. Barton, Ph.D., 1990, Stanford University

Assistant Professor Ovetta L. Harris, Ph.D., 1992, University of Massachusetts

Assistant Professor Alora Valdez, Ph.D., 1992, University of Arizona

Rhode Island College and the University of Rhode Island offer a Ph.D. in education which prepares scholar practitioners for new professional roles as educational leaders, mentors, and scholars. The program is grounded in the knowledge bases of school teaching and learning. The program's four objectives provide a framework for the preparation of scholar practitioners to: 1) develop and employ collegial relationships through professional collaboration; 2) acquire and apply the skills and processes of scholarly inquiry; 3) demonstrate expertise in an area of specialization that advances the mission of the American school; and 4) implement professional practices that promote progress in school settings.

Designed for professionals involved in prekindergarten to twelfth-grade education, the doctoral program admits 12 to 15 students per year. This cohort-based research program is for students who previously earned a master's degree from a regionally accredited institution. A major segment of each student cohort will be made up of teachers and administrators from Rhode Island committed to developing advanced teaching, leadership, and research skills.

Admission Requirements

GRE General Test, official transcripts, curriculum vitae, and letters of recommendation are required. Finalists in the application process must participate in a personal interview. Applicants are admitted for the fall semester only. The completed application package must be received by February 2. The program is offered jointly by the two institutions with single admissions and administrative processes. Prospective applicants should address inquiries concerning the program to one of the co-directors at either Rhode Island College or the University. Formal application materials can be obtained from the URI Graduate School Office or from Rhode Island College.

Program Requirements

The program requires a minimum of 56 credits. Three year-long core seminars emphasize a clinically based case study approach (EDP 610, 611; 620, 621; 630, 631, for a total of 18 credits). Field-based research experiences are associated with each core seminar (EDP 612, 613; 622, 623; 632, 633, for a total of eight credits). Students gain research expertise to help their development as school leaders through course work (EDP 615, 625, for a total of six credits) and the field experiences. Scholarly expertise in a professional area is acquired through specialization courses (12 credits). All students must complete a doctoral dissertation (12 credits) by the fourth year. The dissertation includes three years of course work, with full-time residency required in the second year. To progress through this program, each student must: 1) receive positive recommendations from core seminar professors; 2) pass a qualifying examination upon completion of the first core seminar (EDP 610, 611) and the course in research

methodology (EDP 615); 3) pass a comprehensive examination after completion of all core seminars, specialization course work, and research experiences; and 4) complete a successful dissertation and defense.

Electrical Engineering

M.S., Ph.D. 401-792-2505

Graduate Faculty

Chairperson: Professor William Ohley, Ph.D., 1976, State University of New York, Stony

Director of Graduate Studies: Professor Shashanka S. Mitra, Ph.D., 1957, University of Michigan

Professor G. Faye Boudreaux-Bartels, Ph.D., 1983, Rice University

Professor James C. Daly, Ph.D., 1967, Rensselaer Polytechnic Institute

Professor Leland B. Jackson, Sc.D., 1970, Stevens Institute of Technology

Professor Steven M. Kay, Ph.D., 1980, Georgia Institute of Technology

Professor Ramdas Kumaresan, Ph.D., 1982, University of Rhode Island

Professor Gabriel Lengyel, Ph.D., 1964, University of Toronto

Professor Allen G. Lindgren, Ph.D., 1963, University of Connecticut

Professor Shmuel Mardix, Ph.D., 1969, University of Jerusalem

Professor Angaraih G. Sadasiv, Ph.D., 1963, Purdue University

Professor Harish R.B. Sunak, Ph.D., 1974, University of Southampton

Professor Donald W. Tufts, Sc.D., 1960, Massachusetts Institute of Technology

Professor Richard J. Vaccaro, Ph.D., 1983, Princeton University

Associate Professor Godi Fischer, Ph.D., 1985, Swiss Federal Institute of Technology in the Institute of Telecommunications

Associate Professor Jien-Chung Lo, Ph.D., 1989, University of Southwestern Louisiana

Associate Professor Ying Sun, Ph.D., 1985,

Worcester Polytechnic Institute Associate Professor Peter F. Swaszek, Ph.D., 1982, Princeton University

Associate Professor Qing Yang, Ph.D., 1988, University of Southwestern Louisiana

Adjunct Professor Pranab K. Banerjee, Ph.D., 1971, University of Rhode Island Adjunct Assistant Professor David O. Williams, M.D., 1969, Hahnemann Medical College Professor Emeritus Charles Polk, Ph.D., 1956, University of Pennsylvania

Professor Emeritus John E. Spence, Ph.D., 1962, University of Wisconsin

Specializations

Acoustics and underwater acoustics: information processing in acoustic channels, speech processing, modeling of electroacoustical devices.

Biomedical engineering: physiologic systems modeling and control; medical instrumentation employing digital computer techniques, pattern recognition and image processing in medicine (texture analysis, image classification, and segmentation); biological effects of electric and magnetic fields at the cellular level.

Computer engineering and VLSI: microprogramming systems, multiprocessing, high-speed signal processing; processor realization using VLSI; MOS layout and microchip design; data structures and computer architectures, fault-tolerant computing.

Communication theory: statistical and computer communications; vector quantization; noise modeling and detection; data compression and coding; local area networks, reliable and secure communication.

Digital signal processing: detection and parameter estimation; prediction and filtering; spectrum analysis; array processing; digital filter synthesis; adaptive filtering, algorithm design.

Electrical and optical properties of materials: optical properties of nonmetallic solids, laser-matter interaction, photocathodes; crystallographic techniques for submicron X-ray lithography; radiation damage in nonmetallic solids.

Electromagnetic fields and optical communication: numerical and approximate methods for calculation of electromagnetic fields in inhomogeneous and anisotropic structures (related to biological effects of electromagnetic fields); evaluation of mode characteristics in optical and infrared waveguides.

Systems theory: control and estimation theory; multivariable systems; nonlinear systems, modeling of deterministic and stochastic systems; model order reduction; optimal smoothing, filtering, and prediction; computerized imaging systems and image analysis.

Master of Science

Admission requirements: GRE and B.S. degree in electrical or computer engineering, engineering science, physics, mathematics, or computer science. Preparation in related fields such as aeronautical, civil, chemical, and mechanical engineering or in the life sciences may be acceptable.

Program requirements: thesis or nonthesis option. Individual programs are designed in accordance with the students' backgrounds and interests, but the thesis option requires permission of the chairperson. Thesis or nonthesis option: minimum of 30 credits in science and engineering with a minimum of 18 credits in graduatelevel electrical engineering courses. Attendance at the departmental seminar (ELE 601, 602) is required of all students in graduate residence. Programs of study require departmental and Graduate School approval. In the nonthesis option a written master's examination and one course involving significant independent research and a substantial paper are required.

Doctor of Philosophy

Admission requirements: GRE and M.S. degree or equivalent in electrical engineering, engineering science, physics, mathematics, or computer science.

Program requirements: qualifying examination may be required. A minimum of 42 credits beyond the M.S. degree, 18-24 of which are course credits. The other 18-24 are dissertation credits. A comprehensive examination taken after all formal course work is completed. Attendance at the departmental seminar (ELE 601, 602) is reguired of all students in graduate residence. Dissertation research makes use of major modern laboratories in the listed areas of specialization.

English

M.A., Ph.D. 401-792-5931

Graduate Faculty

Chairperson: Professor Karen F. Stein, Ph.D., 1982, University of Connecticut Director of Graduate Studies: Professor Lois A. Cuddy, Ph.D., 1975, Brown University

Professor Paul G. Arakelian, Ph.D., 1975, Indiana University

Professor Walter L. Barker, Ph.D., 1966, University of Connecticut

Professor Josie P. Campbell, Ph.D., 1972, Pennsylvania State University

Professor Dorothy F. Donnelly, Ph.D., 1979, **Brandeis University**

Professor Don R. Kunz, Ph.D., 1968, University of Washington

Professor John R. Leo, Ph.D., 1972, Northwestern University

Professor Richard T. Neuse, Ph.D., 1959, Yale University

Professor F.E. Okeke-Ezigbo, Ph.D., 1979, State University of New York, Buffalo

Professor Daniel D. Pearlman, Ph.D., 1968, Columbia University

Professor Robert A. Schwegler, Ph.D., 1978, University of Chicago

Professor Linda Shamoon, M.A., 1967, Tufts University

Associate Professor Sally F. Burke, Ph.D., 1978, University of Connecticut

Associate Professor Walter Cane, Ph.D., 1966, Vanderbilt University

Associate Professor Gitahi Gititi, Ph.D., 1990, University of Minnesota

Associate Professor Mathilda M. Hills, Ph.D., 1970, Duke University

Associate Professor Dorothy Jacobs, Ph.D., 1968, University of Michigan

Associate Professor Celest A. Martin, Ph.D., 1979, University of Southern California

Associate Professor RB Reaves, Jr., Ph.D., 1971, University of Wisconsin

Associate Professor Sue Fisher Vaughn, M.A., 1966, Miami University, Ohio

Assistant Professor Mary Cappello, Ph.D., 1988, State University of New York, Buffalo

Assistant Professor Nancy Cook, Ph.D., State University of New York, Buffalo

Assistant Professor William L. Mensel, Jr., Ph.D., 1974, University of Washington Assistant Professor Nedra Reynolds, Ph.D., 1991,

Miami University, Ohio

Assistant Professor Arthur Riss, Ph.D., 1994, University of California, Berkeley Assistant Professor Dana R. Shugar, Ph.D., 1991, University of Iowa Assistant Professor Jean Walton, Ph.D., 1988, State University of New York, Buffalo Professor Emeritus Allan H. MacLaine, Ph.D., 1951, Brown University

Specializations

For the M.A. and for the Ph.D.: historical periods, genres, and major authors in British and American literature; critical theory; gender studies; rhetoric and composition studies; cultural studies/media/film theory.

Master of Arts

Admission requirements: a minimum of 21 credits in English or related courses with a quality point average of B (3.00 on a 4.00 scale) or better in all English courses. Completed application packages are to be sent directly to the Director of Graduate Studies, English Department, University of Rhode Island, Independence Hall, and must be received by February 1. Applications received after February 1 will be reviewed on a space-available basis until the program is filled. Applicants will be accepted for fall admission only. GREs (both general and subject) are requested but not required. Nonnative speakers of English must have a minimum score of 630 on the TOEFL in order to be considered for admission.

Program requirements: there are three options for fulfilling requirements-24 credits plus thesis (six credits); OR 30 credits (including two 600-level seminars with a course requiring a substantial paper involving significant research) plus a comprehensive examination based on a departmental reading list; OR 30 credits (including two 600-level seminars) plus portfolio-based written and oral examinations. The specialization in rhetoric and composition studies requires WRT 512, 535 and ENG 680, 681.

Doctor of Philosophy

The Doctor of Philosophy program is small and selective. Admission is competitive and based mainly on academic merit,

demonstrated capability to do scholarship, and the match of research interests between the applicant and faculty in indicated or developing areas of specialization.

Admission requirements: M.A. in English or equivalent. Although grades are not the only criterion, applicants having less than a 3.30 quality point average (on a 4.00 scale) have a low probability for admission. Completed application packages should be sent to the Director of Graduate Studies. English Department, University of Rhode Island, Independence Hall, and must be received by February 1. Applications received by February 1 will be given a full review and priority for assistantships; applications received after that deadline will be reviewed on a space-available basis until the program is filled. Applicants will be accepted for fall admission only. GREs (both general and subject) are requested but not required; a writing sample of 15 pages maximum is required. Nonnative speakers of English must have a minimum score of 630 on the TOFFL in order to be considered for admission.

Program requirements: 24 credits of course work plus 18 credits of dissertation research in addition to the 30 credits of M.A. course work in English (a total of 72 credits). Three written comprehensive examinations in three nonoverlapping areas, one of which must be critical methodology, and an oral examination. A dissertation and an oral defense. For the specialization in rhetoric and composition studies, WRT 512, 535 and ENG 645 are required. A limited number of 500- and 600-level courses in other departments and programs may be used for program credit if approved as part of the student's program of study before the courses are taken. (In some cases, a language or research tool may be required by a student's doctoral committee in consultation with the Director of Graduate Studies.)

Financial Aid

All requests for tuition waivers, assistantships, and fellowships should be sent to the Director of Graduate Studies. In addition to a limited number of teaching

assistantships, there is a graduate editorial assistantship for the ATQ: American Transcendental Quarterly, a journal of 19thcentury literature and culture. Complete applications for assistantships must accompany the application packet. Priority will be given to applications received by February 1; thereafter, assistantships will be awarded on a space-available basis.

Entomology

M.S. 401-792-2791

Graduate Faculty

Chairperson: Professor Richard J. Hull, Ph.D., 1964, University of California Director of Graduate Studies: Associate Professor Joel M. Chandlee, Ph.D., 1984, North Carolina State University

Professor Richard A. Casagrande, Ph.D., 1975, Michigan State University

Professor Roger A. LeBrun, Ph.D., 1977, Cornell University

Professor Patrick A. Logan, Ph.D., 1978, Michigan State University

Associate Professor Steven R. Alm, Ph.D., 1985, Ohio State University

Associate Professor Thomas N. Mather, Ph.D., 1983, University of Wisconsin

Adjunct Associate Professor Howard S. Ginsberg, Ph.D., 1979, Cornell University

Adjunct Assistant Professor Alan D. Gettman, Ph.D., 1989, University of Florida, Gainesville

Specializations

Entomology: insect ecology, pest management, aquatic entomology, and biology and ecology of disease-transmitting arthropods.

Plant protection: integrated pest management, plant-insect interactions, and biological control.

Master of Science

Admission requirements: GRE and undergraduate major in biological, agricultural, or physical sciences. Fundamental courses in biological sciences, mathematics, and chemistry may be required to make up deficiencies without graduate credit.

Program requirements: course work as determined by graduate committee, three departmental seminars which include a final thesis seminar, and a thesis.

For courses, also see listing under Plant Sciences.

Experimental Statistics

See Statisics.

Fisheries, Animal and Veterinary Science

M.S., Ph.D. (Biological Sciences) 401-792-2477

Graduate Faculty

Chairperson: Professor Murn M. Nippo, Ph.D., 1976, University of Rhode Island Director of Graduate Studies: Professor Richard C. Rhodes, Ph.D., 1980, Texas A&M University Professor Joseph T. DeAlteris, Ph.D., 1986, College of William and Mary Professor Richard E. Wolke, Ph.D., 1968, University of Connecticut Associate Professor Terence M. Bradley, Ph.D., 1983, University of Idaho Associate Professor Anthony T. Mallilo, Ph.D., 1982, Pennsylvania State University Associate Professor Conrad W. Recksiek, Ph.D., 1972, University of Maine Associate Professor Michael A. Rice, Ph.D., 1987, University of California, Irvine Assistant Professor Ulysses G. Whitworth, D.V.M., 1976, Tuskegee Institute Adjunct Associate Professor Joel Bodammer, Ph.D., 1974, University of Wisconsin Adjunct Associate Professor Michael W. Fleming, Ph.D., 1980, Ohio State University Adjunct Associate Professor Grace Klein-MacPhee, Ph.D., 1979, University of Rhode

Adjunct Associate Professor Jan Pechenik, Ph.D., 1978, University of Rhode Island Adjunct Assistant Professor David Berlinsky, Ph.D., 1989, University of Rhode Island Professor Emeritus Pei Wen Chang, Ph.D., 1965, Yale University

MASTER OF SCIENCE

Specializations

Animal and veterinary science: in the specialization animal science, regional, national, and global problems are studied in the areas of animal behavior, endocrinology, nutrition, physiology, and reproductive biology. Both domestic livestock and laboratory animals are used in a research context. In the specialization animal health and disease, animal health problems of regional, national, and global significance are studied. Bacterial and viral diseases are characterized, and the contributions of stress and pathologic conditions to disease are considered.

Fisheries and aquaculture: the specialization aquaculture includes the study of aquaculture of salmonids and shellfish and the genetics, nutrition, and physiology of fishes. The specialization in fisheries includes the study of fisheries science and technology. Aquatic pathology deals with the pathology of aquatic animals and the effects of environmental pollution on aquatic organisms.

Admission Requirements

GRE and an undergraduate major in the biological sciences with a concentration in animal science, fisheries technology, marine biology, microbiology, preveterinary medicine, or zoology, or postgraduate professional degrees (M.D., D.V.M., V.M.D.); one year of organic chemistry and physics. Courses in statistics, histology, and physiology are strongly recommended.

Program Requirements

Animal and veterinary science: for animal science, thesis and 24 credits of course work to include two credits of ASP 501 and/or 502; AVS 412, 472; STA 532. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor. For animal health and disease, thesis and 24 credits of course work to include two semesters of graduate seminar, ASP 501

and/or 502; ASP 401, 534; STA 532. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor.

Fisheries and aquaculture: for fisheries, thesis and 24 credits of course work to include two semesters of graduate seminar, ASP 501 and/or 502; two courses in statistics (at least one at the 500 level); FST 415, 421. A total of 14 credits of ASP or FST course work must be included in the program of study. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor. For aquaculture, thesis and 24 credits of course work to include two semesters of graduate seminar, ASP 501 and/or 502; ASP 400, 483, 486, 581; BCH 581; STA 409. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor. For aquatic pathology, thesis and 24 credits of course work to include two semesters of graduate seminar, ASP 501 and/or 502; ASP 400, 486, 534, 536, 555, 556. Thesis topic and additional course work will be selected by the student after consultation with, and approval of, the major professor.

DOCTOR OF PHILOSOPHY (Biological Sciences)

Specializations

Animal virology: characterization of avian and marine viral infections; recovery of viruses from estuaries, streams, and ponds.

Aquatic pathology: pathology of aquatic animals; effects of environmental pollution on marine organisms.

Admission Requirements

Same as for master's degree, plus Ph.D. qualifying examination.

Program Requirements

Animal virology: enrollment in two semesters of graduate seminar; ASP 534, 536, 538; BCH 581, 582; MIC 432, 533, 552, 641. Suggested courses include BCH 622, 624. Dissertation topic and additional course work will be selected by the student after consultation with, and approval of, the major professor. Comprehensive examination and dissertation.

Aquatic pathology: enrollment in two semesters of graduate seminar, ASP 400, 401, 486, 534, 536, 555, 556; BCH 581, 582; STA 532. Suggested courses include ASP 538, 584, 586; BCH 622, 624; MIC 533. Dissertation topic and additional course work will be selected by the student after consultation with, and approval of, the major professor. Comprehensive examination and dissertation.

Food Science and Nutrition

M.S., Ph.D. (Biological Sciences) 401-792-2466

Graduate Faculty

Chairperson: Professor Richard W. Traxler, Ph.D., 1958, University of Texas Professor Marjorie J. Caldwell, Ph.D., 1972, Cornell University Professor Spiros M. Constantinides, Ph.D., 1966, Michigan State University Professor Chong Min Lee, Ph.D., 1974, University of Rhode Island Professor Arthur G. Rand, Jr., Ph.D., 1964, University of Wisconsin Associate Professor Catherine English, Ph.D., 1993, University of Connecticut Associate Professor Leonard Gerber, Ph.D., 1979, University of Illinois Associate Professor Geoffrey W. Greene, Ph.D., 1984, Pennsylvania State University Assistant Professor Anthony S. Fischl, Ph.D., 1986, Rutgers—The State University Adjunct Professor Edward S. Josephson, Ph.D., 1940, Massachusetts Institute of Technology Adjunct Associate Professor Linda Sebelia, M.S., 1974, Ohio State University

Specializations

Food science: seafood utilization by preservation and product development, seafood quality assessment and fabricated surimi-based products; food quality control; food and lipid biochemistry and physical properties of food; biotechnology

applications of bioprocessing and fermentation; yeast physiology; and environmental technology of waste management for food materials.

Nutritional science: nutritional status and food habits of population groups; dietary changes related to fat intake; vitamin A and provitamin A effects on cellular metabolism; nutrition for athletes and in weight control-diet and exercise; nutrition and computers in foodservice management; and international nutrition.

Dietetics Experience Certificate Program

Admission requirements: cumulative undergraduate quality point average of 3.00 or better; an earned bachelor's degree with completion of the American Dietetic Association (ADA) Plan IV/V program requirements; and the ADA Verification Statement or ADA Declaration of Intent Form from their Plan IV/V program director. Six credits of acceptable course work in the discipline beyond the bachelor's degree are required for applicants whose bachelor's degrees were completed prior to 1986; at least 12 credits are required if the bachelor's degree was completed prior to 1981. Completion of the Graduate School application package and the Pre-Professional Practice Program (AP4) application are required. Criteria used for admission include a balance of: a) academic achievement; b) relevant work experience; c) statement of purpose; and d) professional recommendations. Admission is for the fall term only. Fall 1995 enrollment is expected to be limited to eight students. Program information and application deadlines can be obtained by contacting the department.

Prógram requirements: the Dietetics Experience Certificate Program is an ADAapproved preprofessional practice program (AP4) and is administered under the department's nondegree status. The program consists of 46 weeks of course work and planned experiences in health care facilities in Rhode Island.

Master of Science

Admission requirements: GRE and bachelor's degree with adequate preparation in biochemistry, statistics, and in the area of proposed study. Students from other academic backgrounds are encouraged to apply, but some basic courses may have to be taken for no program credit. The completed application package must be received by April 15 for fall admission and November 15 for spring admission.

Program requirements: thesis; two credits of FSN 511; a minimum of three credits in biochemistry, chemistry, microbiology, or physiology; in food science, FSN 422, 431, 432, and 502, or, in nutritional science, a minimum of nine credits (FSN 505, 551, and 552). If the student has taken any of the courses as an undergraduate, alternate courses should be taken in the same area. All resident students are expected to be continuously registered in FSN 511 or 512, but no more than two credits of FSN 511 can be used for program credit.

Doctor of Philosophy (Biological Sciences)

Admission requirements: GRE and master's degree in a physical or biological science. Students from other academic backgrounds are encouraged to apply, but some basic courses may have to be taken for no program credit. The completed application package must be received by April 15 for fall admission and November 15 for spring admission.

Program requirements: same as master's degree plus a 500- or 600-level course in statistics/experimental design, a total of three credits in FSN 511, and a research problem (FSN 691, 692) under the supervision of an advisor other than the major professor. Comprehensive examination and dissertation. Each candidate shall also gain teaching experience in at least one college-level course. All resident students are expected to be continuously registered in FSN 511 or 512, but no more than three credits of FSN 511 can be used for program credit. A written qualifying examination is required of all students, normally in the first semester of residence.

French

M.A. 401-792-5911

Graduate Faculty

Chairperson: Professor John Grandin, Ph.D., 1970, University of Michigan

Director of Graduate Studies: Associate Professor Joseph G. Morello, Ph.D., 1968, University of Missouri

Professor Armand B. Chartier, Ph.D., 1970, University of Massachusetts, Amherst Professor Kenneth H. Rogers, Ph.D., 1970,

Columbia University

Professor H. Dorothy Rothschild, Ph.D., 1959, Columbia University

Associate Professor JoAnn Hammadou, Ph.D., 1988, Ohio State University

Associate Professor Ira A. Kuhn, Ph.D., 1970, University of Kansas

Associate Professor Constantin Toloudis, Ph.D., 1969, Rice University

Specializations

French studies that include French literature, French-Canadian literature, Black-French studies, linguistics.

Master of Arts

Admission requirements: 24 credits or equivalent of French, of which a minimum of nine must be in literature.

Program requirements: for thesis option, eight 500-level courses and a comprehensive examination; for nonthesis option, ten 500-level courses, including one course with a major paper requiring significant independent research, and comprehensive examination. A maximum of six credits from 400-level courses may be substituted for 500-level courses in the thesis or the nonthesis program.

Geology

M.S. 401-792-2265

Graduate Faculty

Chairperson: Professor O. Don Hermes, Ph.D., 1967, University of North Carolina Director of Graduate Studies: Associate Professor Daniel P. Murray, Ph.D., 1976, Brown University

Professor Jon C. Boothroyd, Ph.D., 1974, University of South Carolina

Professor and State Geologist J. Allan Cain, Ph.D., 1962, Northwestern University

Associate Professor David E. Fastovsky, Ph.D., 1986, University of Wisconsin

Associate Professor Reinhard K. Frohlich, Ph.D., 1966, University of Clausthal-Zellerfeld Assistant Professor Anne I. Veeger, Ph.D., 1991, University of Arizona

Specializations

Sedimentology: emphasis on field projects—a) measurement of Recent barrier, lagoonal and estuarine processes, and investigation of lithofacies; b) Recent braided rivers and alluvial fans; c) depositional systems of ancient rocks.

Stratigraphy—paleontology: paleoenvironmental reconstructions, historical geology, paleontology, paleobiology.

Coastal geomorphology: analysis of coastal land forms using field techniques, remote-sensing aerial and satellite imagery. Emphasis on Rhode Island barriers, Cape Cod, and barrier islands of the Atlantic coast.

Glacial geology: sedimentary aspects of Pleistocene and Recent glacial paleoenvironments of New England and Alaska; environmental mapping.

Hydrogeology: field and laboratory studies of groundwater flow, low-temperature geochemistry, and the interaction between groundwater and the geologic framework.

Applied geophysics: near-surface geophysics such as geoelectrics, gravity, and refraction seismic for groundwater and related topics. Gravity and magnetics related to structural and plutonic geology in southern New England.

Remote sensing: applied remote sensing using optical and computer analysis of satellite imagery and aerial photography in geomorphology and coastal, structural, planetary, and environmental geology.

Petrology—geochemistry: field and laboratory petrologic studies in the New England Appalachians, in the Sierra Nevada of California, and elsewhere, includ-

ing petrogenesis of volcanic, plutonic, and metamorphic rocks.

Structure and tectonics: deformation at regional and microscopic scales; relationship between deformation and metamorphism; emphasis on New England tectonics.

Planetary geology: origin and history of chasms, channels, and valleys of Mars.

Resource and environmental studies: relevant aspects of the above specializations.

Individual programs may include courses and/or research in conjunction with the Graduate School of Oceanography and other departments; interdisciplinary studies are encouraged.

Master of Science

Admission requirements: GRE and bachelor's degree in science or engineering. By the end of the first year, students lacking an undergraduate major equivalent to the bachelor of science degree in geology will be required to demonstrate, through course work and/or qualifying examinations, comparable knowledge of geology and related fields.

Program requirements: for thesis option, 30 credits of course work; thesis and defense; an oral preliminary examination; and a graduate seminar (for no program credit). For nonthesis option, 36 credits of course work, not including a graduate seminar, with half or more credits at the 500 level or above and 18 or more credits in geology; GEL 592; advanced seminars in the relevant area(s) of specialization; an oral preliminary examination; and a written comprehensive examination.

History

M.A. 401-792-2528

Graduate Faculty

Chairperson: Professor Josiah M. Briggs, Ph.D., 1962, Columbia University

Director of Graduate Studies: Professor James F. Findlay, Jr., Ph.D., 1961, Northwestern University Professor Joel A. Cohen, Ph.D., 1967, University of Connecticut

Professor Frank Costigliola, Ph.D., 1973, Cornell University

Professor Robert M. Gutchen, Ph.D., 1966, Columbia University

Professor Chong Sun Kim, Ph.D., 1965, University of Washington

Professor Maurice N. Klein, Ph.D., 1965, Emory University

Professor Sharon H. Strom, Ph.D., 1969, Cornell University

Professor Gary Thurston, Ph.D., 1973, Columbia University

Professor Robert G. Weisbord, Ph.D., 1966, New York University Graduate School

Associate Professor Michael W. Honhart, Ph.D., 1972, Duke University

Assistant Professor Rosa Maria Pegueros, Ph.D., 1993, University of California, Los Angeles Assistant Professor Marie J. Schwattz, Ph.D., 1994, University of Maryland

Adjunct Associate Professor Albert T. Klyberg, Ph.D., 1967, University of Michigan Assistant Professor Emeritus Gino Silvestri, Ph.D., 1969, Syracuse University

Specializations

United States and Europe, with an emphasis on social, cultural, and political history. Students may complement their work in these fields with courses in Latin American or Asian history or with courses taken outside the department, particularly in political science, English, philosophy, and languages.

Students may also take up to six credits from the graduate offerings at Rhode Island College; the available courses will be posted in the department each semester. These courses must be approved for program credit prior to registration and must be included in the six-credit maximum for transfer credit and the 12-credit maximum for advanced standing. The master's program in history includes both class work and individual instruction in the form of 500-level seminars; small 400-level courses that include undergraduates; tutorials; and directed study courses, as well as master's thesis research for those who choose the thesis option. All graduate work stresses independent research and is designed to promote critical reading and

writing. The diversified program—with its requirement for work in more than one field of history and the opportunity it offers of work in another discipline—should be of service both to students who wish to continue their graduate education at the doctoral level and to those who are interested in secondary teaching. Students are required to develop a systematic program of studies with the Director of Graduate Studies during their first semester as a master's degree candidate.

For tutorials (HIS 502, 503, 536, 537, 588, and 589), students participate in 300-level courses and complete additional projects assigned by the instructors. Tutorial arrangements are made with the instructor at the beginning of the semester. To be eligible, a graduate student must not have taken the 300-level course or one closely resembling it as an undergraduate.

Master of Arts

Admission requirements: GRE and bachelor's degree. While 24 credits of history are usually required, majors in related fields may be admitted with the permission of the Director of Graduate Studies and the department chairperson.

Program requirements: there are thesis and nonthesis options. In both options the student must declare a primary concentration in European or United States history, and a secondary concentration in another area of history or in a related field outside the department. An approved program will require 30 credits, including at least six credits from HIS 401, 441, or 481 and at least six credits from HIS 506, 507, and 508. Admission to the thesis option will be granted after evaluation, by the Director of Graduate Studies and two faculty members who serve on the thesis committee, of the student's first year of graduate work. In the nonthesis option, the student may earn no more than 12 credits in tutorials (502, 503, 536, 537, 588, and 589) and directed studies (591). Nine credits will normally be taken in the secondary concentration. A four-hour written comprehensive examination in the student's primary and secondary concentrations and a follow-up oral examination are required. The examining committee will normally consist of two faculty members from the student's primary concentration and one from the secondary concentration. In the thesis option, the student may earn a maximum of nine credits in thesis, tutorials, and directed studies. Work in the secondary concentration may be limited to six credits.

M.A. and M.L.I.S. Cooperative Program

By proper selection of course work, a student may simultaneously earn the degrees of Master of Arts in history and Master of Library and Information Studies.

Admission requirements: GRE (subject test desirable) and other requirements listed for history and library science. Applicant must apply and be accepted in both programs. The application for each program must indicate history/library and information studies as the field of specialization.

Program requirements: students must submit individual programs of study for each degree that satisfy specific core requirements for these programs. Since a maximum of six credits may be jointly used to satisfy degree requirements, a minimum of 66 credits total is required to satisfy the requirements for both degrees.

Human Development and Family Studies

M.S. 401-792-2150

Graduate Faculty

Chairperson: Associate Professor David A.
Caruso, Ph.D., 1985, Cornell University
Director of Graduate Studies: Associate Professor
Jerome Adams, Ph.D., 1989, Purdue
University

Human Development and Family Studies Coordinator: Associate Professor Diane Horm-Wingerd, Ph.D., 1985, Virginia Polytechnic Institute and State University

Professor Phillip G. Clark, 1979, Sc.D., Harvard University

Professor Stewart Cohen, Ph.D., 1967, Purdue University

Professor Gwenneth Rae, Ed.D., 1972,
University of California
Associate Professor Joan Gray Anderson, Ph.D.,
1984, University of California
Associate Professor David A. Caruso, Ph.D.,
1985, Cornell University
Assistant Professor Mary Kalymun, Ph.D., 1982,
University of Pennsylvania
Assistant Professor Karen A. Schroeder, Ph.D.,
1977, University of Connecticut
Assistant Professor Jingjian Xiao, Ph.D., 1991,
Oregon State University

Associate Professor Emerita Helen F. Greene, Ph.D., 1954, Florida State University

Marriage and Family Therapy
Coordinator: Professor Peter E. Maynard, Ph.D.,
1969, State University of New York, Buffalo
Professor Gwenneth Rae, Ed.D., 1972,
University of California

Associate Professor Jerome Adams, Ph.D., 1989, Purdue University

Associate Professor Jerome A. Schaffran, Ph.D., 1971, University of Iowa

Assistant Professor Karen A. Schroeder, Ph.D., 1977, University of Connecticut

College Student Personnel
Coordinator: Associate Professor Jerome A.
Schaffran, Ph.D., 1971, University of Iowa
Professor Peter E. Maynard, Ph.D., 1969, State
University of New York, Buffalo
Associate Professor Jayne Richmond, Ph.D.,
1982, University of Florida
Assistant Professor Gerry Rolley, Ed.D., 1992,
University of Rochester

Specializations

Human development and family studies; marriage and family therapy; college student personnel.

Human Development and Family Studies

Admission requirements: GRE or MAT, PSY 300 or STA 308 or equivalent, and 18 undergraduate credits distributed among at least three of the following areas: human development and family studies, psychology, sociology, biology, and education. Subspecializations are available in human development, early childhood education, family studies, and gerontology.

Program requirements: nine credits of core courses—HDF 500, 530, and 570; six credits of thesis or action research; nine credits of free electives (one course must be taken outside the department); and a

comprehensive examination. An additional 12 credits must be taken from one of the following subspecialization areas: early childhood education—HDF 400, 406, 434, 455, 501, 502, and 503; child development—HDF 400, 406, 434, 502, 503, and 504; adult development/gerontology—HDF 420, 421, 431, 433, 440, 505, 520, 527, 535, and 559; family studies—HDF 430, 431, 433, 434, 505, 535, and 559. A total of 36 credits is required.

State provisional certification: persons wishing to meet state provisional certification requirements (Nursery to Grade 2) must apply for admission to teacher certification (nondegree status). Official transcripts of all previous course work plus two letters of recommendation are required. As a prerequisite to enrolling in courses that meet certification requirements, accepted applicants must complete or have completed the equivalent of an undergraduate degree in human development and family studies.

Marriage and Family Therapy

Admission requirements: GRE or MAT; at least 15 credits of relevant preparation courses, including family relations, developmental theory, personality theory, abnormal psychology, and introduction to counseling or an equivalent course; two letters of recommendation should be from supervisors in a related field attesting to observed experience, emotional stability, and maturity. After initial screening, qualified applicants will be required to come to campus for a personal interview. The goal of the personal interview is to determine whether the applicant possesses the full range of academic qualifications, experiential background, clinical competency, and readiness to undertake the rigors of an academically and emotionally demanding clinical preparation program. Several of the program's faculty members will conduct the interviews. Selection for admission to this program is highly competitive and enrollment is limited. Diversity among the students in the program is a major program goal. The program adheres to the standards established by the American Association for Marriage and Family Therapy (AAMFT). Completed application package must be received by March 1.

Program requirements: a minimum of 45 credits of approved graduate courses, including a 30-hour core and 15 credits of approved electives depending on previous training and background, and a comprehensive examination. This program involves intense clinical practice and a yearlong internship at cooperating agencies or the department's Marriage and Family Therapy Clinic; therefore, full-time students are preferred.

College Student Personnel

Admission requirements: GRE or MAT and interview; preference given to applicants with experience in student affairs.

Program requirements: 27 credits in core HDF courses (HDF 450, 551, 554, 560, 562, 567, 568, 570, 590), six credits in adult development and social science electives, plus one of the following—a) nonthesis option with internship (HDF 580, 581, 583, 584) and a comprehensive examination, for a total of 45 credits; b) nonthesis option with action research project (HDF 595, six credits), one additional elective, and a comprehensive examination, for a total of 42 credits; or c) thesis option (HDF 599, six credits) and one additional elective, for a total of 42 credits.

Industrial and Manufacturing Engineering

See Manufacturing and Industrial Engineering.

Labor and Industrial Relations

M.S. 401-792-2239

Graduate Faculty

Director, Labor Research Center: Professor Charles T. Schmidt, Jr., Ph.D., 1968, Michigan State University (Professor of Industrial Relations) Professor Judith Anderson, Ph.D., 1970, Indiana University

Professor Charles P. Armstrong, Ph.D., 1973, University of Arizona

Professor Harold Barnett, Ph.D., 1973, Massachusetts Institute of Technology

Professor Winifred E. Brownell, Ph.D., 1973, State University of New York, Buffalo

Professor John P. Burkett, Ph.D., 1981, University of California, Berkeley

Professor Norman Coates, Ph.D., 1967, Cornell University

Professor Jerry Cohen, Ph.D., 1973, University of Illinois

Professor William Croasdale, Ed.D., 1966, Teachers College, Columbia University

Professor Albert J. Della Bitta, Ph.D., 1971, University of Massachusetts

Professor James F. Findlay, Jr., Ph.D., 1961, Northwestern University

Professor Timothy M. Hennessey, Ph.D., 1968, University of North Carolina

Professor Jeffrey E. Jarrett, Ph.D., 1967, New York University

Professor Andrew Laviano, J.D., 1965, New York University School of Law

Professor Bernice Lott, Ph.D., 1954, University of California, Los Angeles

Professor Craig E. Overton, Ph.D., 1971, University of Massachusetts

Professor John J. Poggie, Jr., Ph.D., 1968,

University of Minnesota Professor Yngve Ramstad, Ph.D., 1981,

University of California, Berkeley Professor Lawrence Rothstein, Ph.D., 1976,

University of Massachusetts Professor Richard W. Scholl, Ph.D., 1979,

University of California, Irvine Professor Beatrice Schultz, Ph.D., 1969,

University of Michigan Professor James L. Starkey, Ph.D., 1971, Boston

Professor Sharon H. Strom, Ph.D., 1969, Cornell

University

Professor Robert Weisbord, Ph.D., 1966, New York University Graduate School

Associate Professor Laura Beauvais, Ph.D., 1987, University of Tennessee, Knoxville

Associate Professor Elizabeth Cooper, Ph.D., 1985, University of Akron

Associate Professor Diane Disney, Ph.D., 1988, **Brandeis University**

Associate Professor Sandra Ketrow, Ph.D., 1982, Indiana University

Associate Professor Leonard P. Lardaro, Ph.D., 1979, Indiana University

Associate Professor Blair M. Lord, Ph.D., 1975, University of California

Associate Professor Richard McIntyre, Ph.D., 1989, University of Massachusetts

Associate Professor Arthur C. Mead, Ph.D., 1978, Boston College

Associate Professor Carole Miller, Ph.D., 1988, Syracuse University

Assistant Professor Charles Latos, Ph.D., 1977, **Brown University**

Assistant Professor D. Scott Molloy, Ph.D., 1991, Providence College

Assistant Professor Gail A. Shea, Ph.D., 1975, **Brown University**

Adjunct Professor J. Michael Keating, J.D., 1973, Georgetown University Law School

Adjunct Professor Suzanne Taylor, Ph.D., 1970, University of Connecticut

Professor Emeritus Carl Gersuny, Ph.D., 1968, Western Reserve University

Professor Emeritus Elton Rayack, Ph.D., 1957, University of Chicago

The program is designed for union, government, neutral, or human resource management, labor, and industrial relations professionals, or for those students who aspire to such positions. Students in other graduate programs may find it rewarding and professionally desirable to enroll in one or more of the labor relations and labor studies courses. All courses are offered in the very late afternoon or in the evening in Providence and Kingston so that they are convenient for those currently employed. Full-time and part-time programs are available.

Master of Science

Admission requirements: GRE or MAT or GMAT. Undergraduate majors in any field will be considered for admission. Those with majors in social science, history, management, and labor studies are especially encouraged to apply, as are those with engineering, nursing, education, urban affairs, black studies, and women's studies backgrounds. Professional experience in labor and industrial relations will carry additional weight in admission decisions.

Program requirements: minimum of 36 credits including 27-28 credits in core courses and nine credits of specialization

plus requirements of three credits each in statistics and computer science, which may be met by prior course work or examination, and a written master's examination. The required core courses (27–28 credits) are: LRS/HIS 544; LRS/PSC 521; SOC/LRS 432 or MGT 630; LRS/ECN 526 and 534; LRS 531, 541, 542, and 580.

Specializations

The following areas of specialization are listed along with available courses. Substitutions may be made with permission of the director of the Labor Research Center and approval of the Graduate School.

Labor relations: three courses from LRS 520, 533, 545, 581, 590, 591; MGT 640; and LRS 543 or 579.

Human resource administration: three courses from MGT 640; PSC 503 or MGT 641; LRS 533, 545, 581, 590, 591 and LRS 543 or 579; PSY 434; EDC 529 or 583.

Labor and worker studies: three courses from LRS 520, 545, 581, 590, 591; ENG 445; HIS 591; PSC 486; and PSY 480.

Worker/labor or management education and training: three courses from LRS/EDC 579; LRS 581; LRS 590, 591; EDC 505, 539, 581, 582, 583, 584.

International development: three courses including REN 595 and two related electives.

Alternative dispute and conflict resolution processes: three courses including LRS 545, 546, 581, 590, 591, and PSC 420 or 432.

Nondesignated specialization: three courses in an area that satisfies the student's individual professional goals e.g., computer science or statistics; economics or social policy; law and legal processes; or workplace issues such as alcohol and drug abuse, sexual or age discrimination, or racism.

Languages

The University offers Master of Arts degrees in comparative literature studies, French, and Spanish. See separate listings.

Library and Information Studies

M.L.I.S. 401-792-2947

Graduate Faculty

Acting Director, Graduate School of Library and Information Studies: Professor Jonathan S. Tryon, Certificate in Advanced Librarianship, 1974, Columbia University; J.D., 1981, Suffolk University

Assistant to the Director for Regional Studies: Professor Fay Zipkowitz, D.A., 1977, Simmons College

Professor Jonathan S. Tryon, Certificate in Advanced Librarianship, 1974, Columbia University; J.D., 1981, Suffolk University Associate Professor C. Herbert Carson, Ph.D., 1988, Syracuse University

Associate Professor E. Gale Eaton, Ph.D., 1990, University of North Carolina, Chapel Hill Assistant Professor Donna Gilton, Ph.D., 1988, University of Pittsburgh

Assistant Professor Cheryl McCarthy, D.A., 1990, Simmons College

Specializations

The overall goal of the school is to educate librarians who will not only function effectively, but also demonstrate the capacity to affect the course of librarianship. The Graduate School of Library and Information Studies prepares students for professional service in libraries and information agencies by offering an ALA-accredited program leading to the Master of Library and Information Studies (M.L.I.S.) degree. It also provides an opportunity for students to pursue simultaneously master's degrees in library and information studies and in history or public administration. The school library media specialization is accredited by NASDTEC and NCATE.

Through consultation with advisors, students prepare for careers in academic, school, public, or special libraries. They also may plan for specialization in areas such as children's service, reference and bibliography, cataloging, special collections, media programs, information science, automation, administration, young adult services, and library history.

Master of Library and Information Studies

Admission requirements: bachelor's degree (B average) and GRE or MAT at the 50th percentile or above. GRE or MAT waived for applicants with a master's degree. The completed application package should be received by November 15 for spring admission, April 15 for summer admission, and July 15 for fall admission.

Program requirements: 42 credits consisting of LSC 501, 502, 503, 504, and 505 or 506; 27 credits of electives of which up to six may be taken in courses outside library science when relevant to the student's specialization; one course with major paper requiring significant independent research; and a written comprehensive examination. Up to 24 hours may be taken at the regional centers at the University of Massachusetts in Amherst or Boston and at the University of New Hampshire at Durham. No more than six credits or two courses may be taken in nonmatriculating status for transfer into the degree program.

M.A. in History and M.L.I.S. Cooperative Program

By proper selection of course work, a student may simultaneously earn the degrees of Master of Arts in history and Master of Library and Information Studies.

Admission requirements: GRE (subject test desirable) and other requirements listed for history and library science. Applicant must apply and be accepted in both programs. The application to each program must indicate history/library and information studies as the field of specialization.

Program requirements: students must submit individual programs of study for each degree that satisfy specific core requirements for these programs. Since a maximum of six credits may be jointly used to satisfy degree requirements, a minimum of 60 credits total is required to satisfy the requirements for both degrees.

M.P.A. and M.L.I.S. Cooperative Program

A second cooperative program permits joint enrollment in the Master of Library and Information Studies and Master of Public Administration programs. The integrated pursuit of the two degrees makes it possible for nine credits of appropriately selected course work from one program to serve as electives in the other, and for six credits to be applied in the opposite direction. Thus, when planned and taken jointly, the two programs can be completed with a total of 63 credits.

Admission requirements: GRE and other requirements listed for M.L.I.S. and M.P.A. Applicant must apply and be accepted in both programs. The application to each program must indicate M.L.I.S./M.P.A. as the field of specialization.

Program requirements: each student must complete the required core courses for both programs plus three credits of PSC 590 for the M.P.A. After consultation with, and approval of, both departments, students must file separate programs of study for each degree, indicating the courses to be jointly counted. Each student must pass the separate comprehensive examination for each degree. A student who fails to complete one of the programs may, of course, complete the other in accordance with the separate program of study.

Manufacturing and Industrial **Engineering**

M.S. (Manufacturing Engineering) Ph.D. (Industrial and Manufacturing Engineering) 401-792-2455

Graduate Faculty

Chairperson: Professor Winston A. Knight, Ph.D., 1967, Birmingham University Director of Graduate Studies: Professor Peter Dewhurst, Ph.D., 1973, University of Manchester

Professor Geoffrey Boothroyd, Ph.D., 1962, D.Sc., 1974, University of London

Associate Professor David M. Shao, Ph.D., 1970, State University of New York, Buffalo Assistant Professor Manbir Sodhi, Ph.D., 1991, University of Arizona

Adjunct Professor Charles C. Reynolds, Ph.D., 1963, Massachusetts Institute of Technology

Specializations

Fundamentals of manufacturing processes and manufacturing automation; computer systems in manufacturing, including applications of computer vision to control of manufacturing operations.

Product design for manufacture and assembly, and design evaluation for reliability, maintenance, and recycling.

Engineering optimization with applications to manufacturing systems.

Facilities planning and analyses of material handling in manufacturing organiza-

Quality and process control of production.

Master of Science

Admission requirements: GRE (for graduates of non-U.S. universities only) and B.S. degree in industrial, manufacturing, or mechanical engineering. An applicant with a B.S. degree in another field of engineering, mathematics, physics, chemistry, or computer science will be considered; such applicants will be required to complete some deficiency courses.

Program requirements: 30 credits including thesis (six credits); IME 542; IME 544 and 549 or 591, 592, and a graduate elective; three credits each from the areas of fundamentals of manufacturing processes and manufacturing properties of materials, control and organization of manufacturing systems, and computer systems in manufacturing engineering and design. IME 340 or equivalent is a prerequisite.

Doctor of Philosophy

Admission requirements: GRE (for graduates of non-U.S. universities only) and B.S. degree in industrial, manufacturing, or mechanical engineering. An applicant with a B.S. degree in another field of engineering or in mathematics, physics, chemistry, or

computer science will be considered; such applicants will be required to complete some deficiency courses. Although a person with a bachelor's degree may be admitted, this program is designed principally for people who have a master's degree.

Program requirements: qualifying examination may be waived for students with a master's degree. A minimum of 72 credits beyond the B.S. degree, 18 of which are dissertation credits (a master's degree may count for up to 30 credits). Fifty-four credits of course work including IME 541, 544, 549 and 18 credits of required electives with at least two courses selected from each of the following areas of concentration: fundamentals of manufacturing processes and manufacturing properties of materials, control and organization of manufacturing systems, and computer systems in manufacturing and design. Eighteen credits of IME 699. Reading proficiency in a foreign language may be required by the student's committee. A comprehensive examination must be taken after all formal course work is completed. All Ph.D. candidates must register full-time for two consecutive semesters prior to taking the Ph.D. comprehensive examination. Dissertation research makes use of major modern laboratories in the listed areas of specialization.

Financial Aid

A number of graduate and research assistantships are available for qualified graduate students.

Also see Applied Mathematical Sciences on page 111.

Marine Affairs

M.A., M.M.A. 401-792-2596

Graduate Faculty

Chairperson: Professor Lawrence Juda, Ph.D., 1973, Columbia University

Director of Graduate Studies: Professor Dennis W. Nixon, J.D., 1975, University of Cincinnati; M.M.A., 1976, University of Rhode Island

Professor Richard H. Burroughs, Ph.D., 1975, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution

Professor Bruce E. Marti, Ph.D., 1982, University of Florida

Professor Niels West, Ph.D., 1973, Rutgers—The State University

Associate Professor William R. Gordon, Jr., Ph.D., 1987, Texas A&M University

Assistant Professor Gerald H. Krausse, Ph.D., 1975, University of Pittsburgh

Adjunct Professor Thomas Kitsos, Ph.D., 1972, University of Illinois

Adjunct Professor Claiborne D. Pell, M.A., 1946, Columbia University

Adjunct Professor Gerald Seifert, J.D., 1964, Indiana University; M.M.A., 1978, University of Rhode Island

Adjunct Associate Professor Jens C. Sorensen, Ph.D., 1978, University of California,

Professor Emeritus Lewis M. Alexander, Ph.D., 1949, Clark University

Professor Emeritus John A. Knauss, Ph.D., 1959, University of California

Specializations

Coastal zone management, marine transportation and port planning, fisheries law and management, international marine policy and law.

Master of Arts (M.A.)

Admission requirements: GRE and bachelor's degree in related science or social science. For international students, minimum TOEFL score of 575. Full-time applicants are admitted for the fall semester only.

Program requirements: thesis and MAF 482, 502, 577, 651, 652; MAF 511 or appropriate oceanography substitute; REN 514 or appropriate resource economics substitute; plus a minimum of 18 elective credits for a total of 45 credits.

Master of Marine Affairs (M.M.A.)

Admission requirements: prior graduate degree or five years of equivalent experience in marine areas. For international students, minimum TOEFL score of 575. Fulltime applicants are admitted for the fall semester only.

Program requirements: nonthesis program; MAF 577, 589, 651, 652; REN 514; MAF 511 or appropriate oceanography substitute; plus 12 elective credits for a total of 30 credits; written comprehensive examination.

Mathematics

M.S., Ph.D. 401-792-2709

Graduate Faculty

Chairperson: Professor John T. Montgomery, Ph.D., 1971, University of Wisconsin

Director of Graduate Studies: Professor Barbara Kaskosz, Ph.D., 1977, Polish Academy of Sciences

Professor Raymond A. Beauregard, Ph.D., 1968, University of New Hampshire

Professor Dilip K. Datta, Ph.D., 1963, Delhi University

Professor Rodney D. Driver, Ph.D., 1960, University of Minnesota

Professor Norman J. Finizio, Ph.D., 1972, Courant Institute of Mathematical Sciences, New York University

Professor John B. Fraleigh, M.A., 1956, Princeton University

Professor Edward A. Grove, Ph.D., 1969, Brown University

Professor Gerasimos Ladas, Ph.D., 1968, New York University

Professor James T. Lewis, Ph.D., 1969, Brown University

Professor Pan-Tai Liu, Ph.D., 1968, State University of New York, Stony Brook

Professor Lewis I. Pakula, Ph.D., 1972, Massachusetts Institute of Technology

Professor Oved Shisha, Ph.D., 1958, Hebrew University

Professor Robert C. Sine, Ph.D., 1962, University of Illinois

Professor E. Ramnath Suryanarayan, Ph.D., 1961, University of Michigan

Professor Ghasi Ram Verma, Ph.D., 1957, Rajasthan University

Associate Professor Dean Clark, Ph.D., 1978, Brown University

Assistant Professor Nancy Eaton, Ph.D., 1992, Emory University

Assistant Professor Orlando Merino, Ph.D., 1988, University of California, San Diego Assistant Professor Catherine Roberts, Ph.D., 1992, Northwestern University Adjunct Assistant Professor David H. Wood, Ph.D., 1972, University of Rhode Island Professor Emeritus Emilio O. Roxin, Ph.D., 1959, University of Buenos Aires

Professor Emeritus Sol Schwartzman, Ph.D., 1953, Yale University

Specializations

Ordinary, functional, and stochastic differential equations, partial differential equations, abstract differential equations, difference equations, functional analysis, approximation theory, probability, fluid mechanics, control theory, and differential games.

Master of Science

Admission requirements: bachelor's degree with strong undergraduate background in mathematics. Applicants with deficiencies in mathematics may be accepted subject to taking certain undergraduate courses in addition to the graduate program requirements.

Program requirements: 30 credits (or 24 plus thesis), including at least 18 credits in mathematics of which at least 12 must be at the 500 level or above. A course requiring a substantial paper involving significant independent study and a written comprehensive examination are required for the nonthesis option. MTH 435 and 513 must be completed with a grade of A or B. Recommended courses include MTH 515, 525, 535, 536, and 562.

Doctor of Philosophy

Admission requirements: same as for master's program.

Program requirements: MTH 513, 515, 525, 535, 536, and 562, plus specialized courses and electives. Reading ability (in candidate's specialty and with a dictionary) in one language chosen from French, German, or Russian. A Ph.D. qualifying examination is required of all students admitted without a master's degree in a closely related field.

Also see the listing under Applied Mathematical Sciences on page 111.

General Information

Programs of study can be designed for individuals who are employed on a full-time basis. However, all Ph.D. candidates must register full-time for two consecutive semesters prior to taking the doctoral comprehensive examination.

Mechanical Engineering and Applied Mechanics

M.S., Ph.D. 401-792-2524

Graduate Faculty

Chairperson: Professor Martin H. Sadd, Ph.D., 1971, Illinois Institute of Technology Director of Graduate Studies: Professor Frank M. White, Ph.D., 1959, Georgia Institute of Technology

Professor Philip Datseris, Ph.D., 1976, Columbia University

Professor Mohammad Faghri, Ph.D., 1973, Oregon State University

Professor William R. Ferrante, Ph.D., 1962, Virginia Polytechnic Institute

Professor Hamouda Ghonem, Ph.D., 1978, McGill University

Professor Thomas J. Kim, Ph.D., 1967, University of Illinois

Professor Richard C. Lessmann, Ph.D., 1969, Brown University

Professor William J. Palm, Ph.D., 1971, Northwestern University

Professor Arun Shukla, Ph.D., 1981, University of Maryland

Associate Professor Musa Jouaneh, Ph.D., 1989, University of California, Berkeley

Associate Professor Daniel G. Olson, Ph.D., 1987, University of Minnesota

Associate Professor David G. Taggart, Ph.D., 1989, University of Pennsylvania

Assistant Professor Osama Ibrahim, Ph.D., 1991, University of Wisconsin, Madison

Assistant Professor Zongqin Zhang, Ph.D., 1990, Duke University

Adjunct Professor Alexander J. Patton, Ph.D., 1972, University of Rhode Island

Adjunct Assistant Professor Richard Hubbell, Ph.D., 1989, University of Rhode Island

Adjunct Assistant Professor Wayne Tucker, Ph.D., 1987, University of Rhode Island

Professor Emeritus Frank DeLuise, M.S., 1950, University of Rhode Island

Specializations

Fluid mechanics: boundary layer theory, separated flows, turbulence, particle flow interactions, dispersions, geophysical flows, flow measurement, computational methods.

Robotics and design: robotics, expert systems, kinematics, design optimization, lubrication theory, dynamic face seals, reliability analysis and prediction, computer-aided design, manufacturing.

Solid mechanics: elasticity, plasticity, continuum mechanics, fracture mechanics, fatigue, photomechanics, wave propagation and dynamic geomechanics, computational methods including finite element and boundary element methods, composite and ceramic material behavior, micromechanics, nonlinear mechanics, mechanics of waterjet processing, fiber optic sensors.

Systems and control: robotics, mathematical modeling of control systems, stability, nonlinear systems, microprocessor and digital control, advanced dynamics, lumped and distributed parameter vibration theory.

Thermal science: phase change problems, convection heat transfer, direct contact heat transfer, direct energy conversion, solar energy developments, new engine developments, thermal pollution, solar collector systems, computational heat transfer.

Master of Science

Admission requirements: GRE (required of foreign applicants only), B.S. degree in mechanical engineering, applied mechanics, aerospace engineering, or in a related field such as engineering science, civil engineering, applied mathematics, applied physics. Students admitted to the program will be expected to have the equivalent of MCE 372 and 373. Students without this background may be required to make up this deficiency with no program credit.

Program requirements: for thesis option, 30 credits exclusive of seminar; thesis (required of all full-time students); one course outside the area of specialization; and MCE 501, 502, graduate seminar (required of all on-campus students). For nonthesis option for part-time students, permission of chairperson; 33 credits exclusive of seminar, including one course outside specialization; one course requiring a substantial paper involving significant independent study; and a comprehensive examination.

Financial aid: a number of graduate and research assistantships are available for qualified M.S. students.

Doctor of Philosophy

Admission requirements: GRE (required of foreign applicants only); master's degree. Exceptional students with a bachelor's degree and superior master's candidates who have passed the Ph.D. qualifying examination also will be considered.

Program requirements: Ph.D. qualifying examination; students admitted with only a bachelor's degree are required to take this examination after one year of full-time study. Completion of a minimum of 24 credits of course work beyond the master's degree, exclusive of seminar (48 credits of course work after bachelor's degree); MCE 501, 502, graduate seminar (required of all on-campus students). Comprehensive examination and dissertation.

Financial aid: a number of graduate and research assistantships are available for qualified Ph.D. students. Temporary instructorships may be available for highly qualified Ph.D. students.

General Information

Programs of study can be designed for individuals who are employed on a fulltime basis. However, all Ph.D. candidates must register full-time for two consecutive semesters prior to taking the comprehensive examination.

Medical Technology

See Clinical Laboratory Science.

Medicinal Chemistry

M.S., Ph.D. (Pharmaceutical Sciences) 401-792-2776

Graduate Faculty

Chairperson: Professor Raymond P. Panzica, Ph.D., 1972, University of Utah Professor Elie Abushanab, Ph.D., 1965, University of Wisconsin Assistant Professor Bongsup P. Cho, Ph.D., 1985, University of Illinois Medical Center Adjunct Assistant Professor Thomas M. Lalor, Ph.D., 1982, Tufts University

Specializations

Research activities are focused on the design and synthesis of chemotherapeutic agents. The areas of cancer and viral chemotherapy receive the greatest attention from our faculty. Research projects include the rational development of new compounds by synthetic or microbial methods, the chemical modification of clinical agents to facilitate drug delivery to targeted sites, and the synthesis of enzyme inhibitors. Other projects focus on the synthesis of agents to combat tropical and cardiovascular diseases, and on mechanisms of chemical carcinogenesis.

Master of Science

Admission requirements: GRE (for graduates of non-U.S. universities only) and bachelor's degree in pharmacy, chemistry, biochemistry, or allied sciences.

Program requirements: thesis; A.C.S. placement examination (organic) to determine specific program requirement; CHM 431, 432, or BCH 435 or equivalent; CHM 425, 427, and 521 or 522; MCH 443, 444, or equivalent; MCH 548 or equivalent, 621, 622; written master's examination. All students must register for and attend a seminar each semester while in graduate residence. Each student will present one seminar per semester unless otherwise indicated by the majority of the department faculty.

Doctor of Philosophy (Pharmaceutical Sciences)

Admission requirements: GRE and master's degree in pharmacy, chemistry, biochemistry, or allied sciences, or bachelor's degree in one of these with evidence of superior ability.

Program requirements: dissertation; A.C.S. placement examination (organic) to determine specific program requirements; same as for master's degree plus CHM 521 and 522. Also, MCH 549 is recommended. Primary emphasis is on organic, medicinal chemistry and pharmaceutical analysis. Comprehensive examination.

Qualifying examination is required for candidates accepted without the M.S. degree.

Microbiology

M.S., Ph.D. (Biological Sciences) 401-792-2205

Graduate Faculty

Chairperson and Director of Graduate Studies: Professor David C. Laux, Ph.D., 1971, University of Arizona

Professor Paul S. Cohen, Ph.D., 1964, Boston University

Professor Karl A. Hartman, Ph.D., 1962, Massachusetts Institute of Technology

Professor Linda A. Hufnagel, Ph.D., 1967, University of Pennsylvania

Professor Richard W. Traxler, Ph.D., 1958, University of Texas

Professor George C. Tremblay, Ph.D., 1965, St. Louis University

Associate Professor Terence M. Bradley, Ph.D., 1983, University of Idaho

Associate Professor Joel M. Chandlee, Ph.D., 1984, North Carolina State University

Associate Professor Marian R. Goldsmith, Ph.D., 1970, University of Pennsylvania

Associate Professor William R. Krul, Ph.D., 1967, Purdue University

Associate Professor John P. Mottinger, Ph.D., 1968, Indiana University

Associate Professor David R. Nelson, Ph.D., 1979, University of California, Los Angeles Associate Professor Jay F. Sperry, Ph.D., 1974, University of Kansas Assistant Professor Anthony S. Fischl, Ph.D., 1986, Rutgers—The State University Assistant Professor Joanna Hanks Norris, Ph.D., 1982, Michigan State University Adjunct Assistant Professor Shashikant Ř. Mehta, Ph.D., 1984, University of Texas, Houston Professor Emeritus Victor J. Cabelli, Ph.D., 1951,

Ph.D., 1984, University of Texas, Houston Professor Emeritus Victor J. Cabelli, Ph.D., 1951, University of California, Los Angeles Professor Emeritus Norris P. Wood, Ph.D., 1955, University of Pennsylvania

Specializations

Cell biology, cellular development, ultrastructure: ciliogenesis in protozoa, electron microscopy, ultrastructure of electrically conducting systems, cell culture, cellular immunity.

Medical microbiology: pathogenesis, immunology, mycology, virology.

Microbial ecology, industrial microbiology, pollution: marine and freshwater microbial ecology, biodeterioration, sanitary bacteriology, coliform ecology.

Microbial genetics, physiology, molecular microbiology: genetic and molecular relation of cellular morphogenesis and development, bacterial colonization of the mammalian intestine, messenger RNA metabolism in procaryotes and eucaryotes, virus multiplication, control of transport and metabolism, mechanisms of survival, membrane structure.

Master of Science

Admission requirements: GRE and two semesters each of biological sciences (botany, zoology), general and organic chemistry, mathematics, calculus, and physics; a semester each of microbiology, genetics, quantitative analysis, biochemistry, and statistics. Applicants with deficiencies in these background courses may be required to complete appropriate course work without graduate credit.

Program requirements: thesis; BCH 581; MIC 413, 414, 415, 416, 599, 695, and 696; major portion of courses in microbiology, including one in virology, mycology, phycology, cell biology, or protozoology; written comprehensive examination.

Doctor of Philosophy (Biological Sciences)

Admission requirements: same as for master's degree. A course in physical chemistry is also recommended.

Program requirements: same as for master's degree plus BCH 582; MIC 533, 552, and dissertation. A course in microbial physiology (MIC 641, BOT 534, OCG 663, or equivalent). Of the credits earned beyond the master's degree, 18 should be in course work. Qualifying examination is required for students admitted without a master's degree. Prior to the last semester, the candidate must pass a written and oral comprehensive examination in the major areas of microbiology. Dissertation.

Music

M.M. 401-792-2431

Graduate Faculty

Chairperson: Professor Ronald T. Lee, Ph.D., 1970, University of Michigan

Coordinator of Graduate Studies: Professor Gene J. Pollart, M.M., 1967, University of Colorado

Professor John D. Dempsey, M.M., 1964, Eastman School of Music, University of Rochester

Professor Henry C. Fuchs, M.Mus., 1961, University of Michigan

Professor Geoffrey D. Gibbs, D.M.A., 1974, Eastman School of Music, University of Rochester

Professor George E. Kent, M.M., 1960, New England Conservatory of Music

Professor James Ladewig, Ph.D., 1978, University of California, Berkeley

Professor W. Donald Rankin, D.M.A., 1970, Boston University

Associate Professor Gary Glaze, M.M., 1962, University of Michigan

Associate Professor Carolyn Livingston, Ph.D., 1986, University of Florida

Associate Professor David Saladino, Ph.D., 1984, Florida State University

Assistant Professor Ann Danis, M.M., 1971, New England Conservatory

Master of Music

Admission requirements: undergraduate major, or the equivalent, in music with a quality point average of 2.50 or above. Applicants for performance as a specialization, or for the performance/essay subspecialization under music education, must pass an audition in their major performance subject on tape or, preferably, in person, before acceptance into a program. Applicants for conducting as a specialization must pass an audition in choral or instrumental conducting, on videotape or, preferably, in person. Applicants for composition as a subspecialization must submit a portfolio of scores and/or tapes of original works.

Program requirements: post-admission placement examinations in appropriate areas (music history, theory, composition, and/or music education) determine whether background deficiencies must be made up with no program credit. A minimum of 30 credits is required for graduation. One-half of the program credits must be at the 500 level. (Teacher certification requires additional courses in education at the undergraduate level.)

Specializations

Performance: 12 credits of performance in MUS 510 (minimum of three in a semester) plus MUS 548, 550, 567, 580, 581, and three credits distributed according to the major performance subject, as follows. For vocalists, two credits in MUS 598 and music elective. Vocalists are also tested in foreign language diction and reading. For pianists, two credits in MUS 590 or 598 and music elective. For organists and guitarists, two credits in MUS 598 and music elective. For other instrumentalists, MUS 512 and ensemble elective. All performance candidates must also take a minimum of nine credits of electives from music history and theory/composition (no more than six credits in any one of these two areas), and pass a written comprehensive examination in music history, theory, and the performance major.

Music education: MUS 540, 545, 548, 579, 580, 581, and nine credits in one of the following subject areas. For performance/essay, six credits of MUS 510 (2 + 2 + 2 or 3 + 3 credits), 550, and 570. For conducting, MUS 511, 512, and 513. For composition (classical or studio), six credits of MUS 510V (2 + 2 + 2 or 3 + 3), 511 or 512 and 552. Additional credits recommended for studio composition are MUS 579 in a professional recording studio, 596, or 598]. For thesis, at least six credits in MUS 599 and three elective credits. All music education candidates must also take a minimum of nine credits of electives from music history, theory/composition, and performance (no more than six credits in any one of these three areas, and performance only if it is not already part of the specialization). Students in a thesis program must pass a written qualifying examination before thesis work is begun and defend the thesis in a final oral examination. All other music education candidates must pass a written comprehensive examination in music history, theory, and music education.

Natural Resources

M.S., Ph.D. (Biological Sciences) 401-792-2370

Graduate Faculty .

Cornell University

Chairperson: Professor William R. Wright, Ph.D., 1972, University of Maryland Director of Graduate Studies: Professor Peter August, Ph.D., 1981, Boston University Professor James H. Brown, Jr., D.F., 1965, Duke University Professor Arthur J. Gold, Ph.D., 1983, Michigan State University Professor Francis C. Golet, Ph.D., 1973, University of Massachusetts Professor Thomas P. Husband, Ph.D., 1977, Michigan State University Professor Robert H. Miller, Ph.D., 1964, University of Minnesota Assistant Professor José A. Amador, Ph.D., 1990, Cornell University Adjunct Professor P.A. Buckley, Ph.D., 1966,

Adjunct Associate Professor William R. Eddleman, Ph.D., 1983, Oklahoma State

Adjunct Associate Professor Peter M. Groffman, Ph.D., 1984, University of Georgia Adjunct Assistant Professor Vernon C. Bleich, Ph.D., 1992, University of Alaska, Fairbanks Adjunct Assistant Professor Amy Gamerdinger, Ph.D., 1989, Cornell University Adjunct Assistant Professor Josef H. Gorres, Ph.D., 1983, University of Manchester Adjunct Assistant Professor Anish R. Jantrania, Ph.D., 1989, Clemson University Adjunct Assistant Professor Mark C. Wallace,

Ph.D., 1991, University of Arizona

Specializations

Soil chemistry, soil biochemistry, soil genesis and classification, soil fertility and management, soil properties and land use, organic geochemistry, water resources management, avian and mammalian ecology, wetland ecology, forest science, wildlife habitat analysis, wildlife management.

Master of Science

Admission requirements: GRE and bachelor's degree with undergraduate major in a biological or physical science. Applicants with course deficiencies may be required to take appropriate undergraduate courses in the basic sciences without program credit.

Program requirements: for thesis option, thesis and 24 credits including NRS 500. For nonthesis option, permission of chairperson, 36 credits with a minimum of 14 credits in natural resources science to include NRS 500 and 591, three credits in statistics, and a written master's examination. NRS 591 will require a substantial paper involving significant independent research. Additional prerequisite courses in the basic sciences may be required prior to admission to a degree program.

Doctor of Philosophy (Biological Sciences)

Limited to soil science and organic geochemistry specializations.

Admission requirements: GRE and M.S. degree with thesis in a biological or physical science.

Program requirements: dissertation, advanced courses determined in consultation with the candidate's committee, and comprehensive examination.

Nursing

M.S., Ph.D. 401-792-2766

Graduate Faculty

Acting Dean: Associate Professor Dayle Hunt Joseph, R.N., Ed.D., 1982, Boston University Director of Graduate Studies: Professor Donna Schwartz-Barcott, R.N., Ph.D., 1978, University of North Carolina Professor Janet I. Hirsch, R.N., Ed.D., 1978, **Boston University** Professor Hesook S. Kim, R.N., Ph.D., 1977, **Brown University** Professor Margaret McGrath, R.N., D.N.Sc., 1988, Boston University Professor Jean Miller, R.N., Ph.D., 1975, University of Washington Professor Norma Jean Schmieding, R.N., Ed.D., 1983, Boston University Associate Professor Cheryl Beck, R.N., D.N.Sc., 1982, Boston University Associate Professor Patricia M. Burbank, R.N., D.N.Sc., 1988, Boston University Associate Professor Jacqueline D. Fortin, R.N., D.N.Sc., 1984, Boston University Associate Professor Marion Garey, R.N., Ed.D., 1985, Boston University Associate Professor Vanessa Marshall, R.N., Sc.D., 1986, Harvard School of Public Health Associate Professor Evelyn Yeaw, R.N., Ph.D., 1983, Boston College Assistant Professor Marlene A. Dufault, Ph.D., 1983, University of Connecticut Assistant Professor Denise Fimbel-Coppa, R.N., M.S., 1979, University of Colorado Assistant Professor Holly Powell Kennedy, R.N., M.S., 1978, Medical College of Georgia Assistant Professor Cynthia Padula, R.N., Ph.D.,

Specializations

For the M.S.: education, administration, mental health care, primary health care,

1994, University of Connecticut

University of Rhode Island

M.S., 1982, Boston University

Assistant Professor Diane Plante, R.N., M.S.,

Assistant Professor Rebecca Sweat-Carley, R.N.,

clinical practice (with emphasis on critical care, gerontological nursing, or parentchild nursing), and nurse-midwifery.

For the Ph.D.: clinical nursing research in the domains of client, client-nurse interactions, and nursing practice.

Master of Science

Admission requirements: MAT or GRE; a bachelor's degree from an NLN-accredited program with an upper-division major in nursing and an undergraduate course in statistics. For specialization in primary health care, two years of professional nursing practice. For specialization in midwifery, two years of professional nursing practice in maternity and completion of a course in expanded assessment skills in nursing, including newborn and pediatric assessment and equivalent of NUR 503 and 504. Students who have not completed upper-division undergraduate nursing course work will be required to make up this deficiency prior to admission. Completed application package must be received by November 15 for spring admission and April 15 for summer and fall admission. Acceptance is based on a full review of the applicant's record and not on any one single component.

Program requirements: 40 credits for education, administration, mental health, and clinical practice specializations; 41 credits for primary health care specialization; 45 credits for midwifery concentration, including 16 credits in core courses (NUR 501, 502, 505, 507, 510, and 520); 15-26 credits in the area of specialization (NUR 521, 522, 541, 542 for education; NUR 521, 522, 551, 552 for administration; NUR 511, 512, 513, 514 for mental health care; NUR 531, 532, 533, 534 for primary health care; NUR 521, 522, 569, and 562 or 563 or 564 for clinical practice; and NUR 571, 572, 573, 574, 575, 576, 577 for midwifery); nine credits of restricted electives related to the area of specialization, except for midwifery, which requires three credits, and primary health care, which requires 10 credits, including ZOO 442 or equivalent, NUR 503 and 504, and three credits of electives related to the

area of specialization; a major paper involving significant independent study; and a written comprehensive examination.

Doctor of Philosophy

Admission requirements: GRE (scores at 60th percentile or above are desirable); a bachelor's degree from an NLN-accredited program or its equivalent in nursing and a master's degree in nursing or its equivalent (cumulative averages of 3.00 and 3.30, respectively, are desirable); two scholarly papers (one theoretical and one empirical) or a master's thesis or equivalent; three recommendations for doctoral study including one by a doctorally prepared person; a statement of purpose indicating goals congruent with those of the program and institution; and a course in statistics including inferential statistics. Acceptance is based on a full review of the applicant's record and not on any one single component.

Program requirements: a minimum of 61 credits including core courses in nursing (19 credits) and cognates (six credits); electives in nursing (six credits) and research methods (six credits); free electives (six credits); and the doctoral dissertation (at least 18 credits), plus written and oral comprehensive examinations in nursing theory, research methods, and one substantive area.

Ocean Engineering

M.S., Ph.D. 401-792-2273

Graduate Faculty

Chairperson: Professor Malcolm L. Spaulding, Ph.D., 1972, University of Rhode Island Director of Graduate Studies: Professor Peter R. Stepanishen, Ph.D., 1969, Pennsylvania State University Professor Richard Brown, Ph.D., 1977, University of Cambridge Professor Armand J. Silva, Ph.D., 1965, University of Connecticut

Professor Robert C. Tyce, Ph.D., 1976, Scripps Institution of Oceanography, University of California

Professor Frank M. White, Ph.D., 1959, Georgia Institute of Technology

Professor Raymond M. Wright, Ph.D., 1981, Pennsylvania State University

Associate Professor Stephan Grilli, Ph.D., 1985, University of Liege, Belgium

Associate Professor Sau-Lon James Hu, Ph.D., 1984, Rice University

Associate Professor James H. Miller, D.Sc., 1987, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution

Adjunct Professor David H. Shonting, Sc.D., 1966, Massachusetts Institute of Technology Adjunct Associate Professor James S. Uhlman,

Ph.D., 1983, Massachusetts Institute of Technology

Specializations

Ocean instrumentation and data analysis, underwater acoustics, marine hydrodynamics, marine geomechanics, coastal and nearshore processes, coastal and offshore structures, remote sensing, and composite materials and corrosion.

Master of Science

Admission requirements: B.S. degree in engineering, physics, applied mathematics, or other technical disciplines. Students with a nonengineering background may be required to make up deficiencies by taking undergraduate courses in thermodynamics, fluid mechanics, strength of material, electrical circuits, or applied mathematics.

Program requirements: Core requirements of four courses selected from OCE 510, 514, 522, 534, 560, 561, 565, 571, 582, one course selected from OCG 501, 521, or 540, or an advanced-level oceanography course. For thesis option, a total of 30 credits, including core requirements plus thesis and at least nine credits of electives exclusive of OCE 605, 606. For nonthesis option for part-time students, permission of chairperson; a total of 33 credits, including core requirements plus 18 credits exclusive of OCE 605, 606, but including at least one course requiring a substantial paper involving significant independent study; and a written master's examination.

Doctor of Philosophy

Admission requirements: M.S. degree in engineering or equivalent; exceptional students with a Bachelor of Science will also be considered. All students will be required to complete the OCE and OCG core courses for the M.S. degree in ocean engineering if equivalent courses are not included in their master's degree.

Program requirements: Ph.D. qualifying examination, dissertation, one advanced applied mathematics course, one graduate-level course in another engineering department, one additional oceanography and two additional ocean engineering courses. Students entering with a master's degree will be required to complete a minimum of 30 credits of course work including the above-noted courses. Students entering with a bachelor's degree will be required to complete at least 60 credits, which also includes the courses required for the M.S. in ocean engineering.

Special Financial Aid

Graduate and research assistantships are available for highly qualified students. Some industrial and other fellowships are also available.

General Information

Programs of study can be designed for individuals who are employed on a fulltime basis.

Oceanography

M.S., Ph.D. 401-792-6246

Graduate Faculty

Dean: Professor Margaret Leinen, Ph.D., 1980, University of Rhode Island

Associate Dean: Professor James A. Yoder, Ph.D., 1979, University of Rhode Island

Professor Michael L. Bender, Ph.D., 1970, Columbia University

Professor Peter Cornillon, Ph.D., 1973, Comell University

Professor Ann G. Durbin, Ph.D., 1976, University of Rhode Island

Professor Edward G. Durbin, Ph.D., 1976, University of Rhode Island

Professor Paul E. Hargraves, Ph.D., 1968, College of William and Mary

Professor Dana R. Kester, Ph.D., 1969, Oregon State University

Professor Roger L. Larson, Ph.D., 1970, Scripps Institution of Oceanography, University of

Professor John T. Merrill, Ph.D., 1976, University of Colorado

Professor Scott W. Nixon, Ph.D., 1969, University of North Carolina

Professor Candace A. Oviatt, Ph.D., 1967, University of Rhode Island

Professor Michael E.Q. Pilson, Ph.D., 1964, University of California, San Diego

Professor James G. Quinn, Ph.D., 1967, University of Connecticut

Professor Kenneth A. Rahn, Ph.D., 1971, University of Michigan

Professor Hans T. Rossby, Ph.D., 1966, Massachusetts Institute of Technology

Professor Jean-Guy Schilling, Ph.D., 1966, Massachusetts Institute of Technology

Professor Haraldur Sigurdsson, Ph.D., 1970, Durham University, England

Professor Theodore J. Smayda, Dr.Philos., 1967, University of Oslo

Professor Elijah Swift V, Ph.D., 1967, Johns **Hopkins University**

Professor Robert C. Tyce, Ph.D., 1976, Scripps Institution of Oceanography, University of California

Professor D. Randolph Watts, Ph.D., 1973, Cornell University

Professor Mark Wimbush, Ph.D., 1969, Scripps Institution of Oceanography, University of California

Professor Howard E. Winn, Ph.D., 1955, University of Michigan

Professor Karen Wishner, Ph.D., 1979, Scripps Institution of Oceanography, University of California

Associate Research Professor Richard Arimoto, Ph.D., 1981, University of Connecticut

Associate Professor Steven N. Carey, Ph.D., 1983, University of Rhode Island

Associate Professor Jeremy S. Collie, Ph.D., 1985, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution

Associate Professor Steven D'Hondt, Ph.D., 1990, Princeton University

Associate Professor Brian G. Heikes, Ph.D., 1984, University of Michigan

Associate Professor John King, Ph.D., 1983, University of Minnesota

Associate Professor Lewis M. Rothstein, Ph.D., 1983, University of Hawaii Assistant Professor Teresa King Hagelberg, Ph.D., 1993, Oregon State University Assistant Professor Tetsu Hara, Ph.D., 1990, Massachusetts Institute of Technology Assistant Professor David L. Hebert, Ph.D., 1988, Dalhousie University, Canada Assistant Professor Christopher R. Kincaid, Ph.D., 1989, Johns Hopkins University Assistant Professor Bradley Moran, Ph.D., 1991, Dalhousie University, Canada Professor Emeritus H. Perry Jeffries, Ph.D., 1959, Rutgers—The State University Professor Emeritus John A. Knauss, Ph.D., 1959, University of California Professor Emeritus Saul B. Saila, Ph.D., 1952, Cornell University Professor Emeritus John McN. Sieburth, Ph.D., 1954, University of Minnesota Associate Professor Emeritus Theodore A. Napora, Ph.D., 1964, Yale University

Specializations

Biological, chemical, geological, and physical oceanography.

Master of Science

Admission requirements: GRE (aptitude required, advanced in the applicant's undergraduate major recommended) and bachelor's degree in natural sciences or engineering. Most applicants are admitted for the fall semester, but admission for the start of the second semester is possible. Due to the limited number of students that can be accepted as degree candidates, no application will be considered which shows an undergraduate average of less than B unless there is postbaccalaureate work indicating outstanding ability. To ensure full consideration for admission and financial support, the completed application packet should be received by January 15.

Program requirements: thesis, OCG 695, and participation in a regular ocean research cruise. For specialization in biological and chemical oceanography, OCG 501, 521, 540, and 561; for specialization in geological oceanography, six credits of 500- and 600-level OCG courses outside the geological oceanography discipline

(not including OCG 695); for specialization in physical oceanography, OCG 501, 510, and any two of OCG 605, 610, and 613.

Doctor of Philosophy

Admission requirements: GRE (aptitude required, advanced in the applicant's undergraduate major recommended); bachelor's degree in natural sciences or engineering. Most applicants are admitted for the fall semester, but admission for the start of the second semester is possible. Due to the limited number of students that can be accepted as degree candidates, no application will be considered which shows an undergraduate average of less than B unless there is postbaccalaureate work indicating outstanding ability. To ensure full consideration for admission and financial support, the completed application packet should be received by January 15.

Program requirements: comprehensive examination; dissertation; OCG 695; participation in a regular ocean research cruise; six credits of 600-level OCG courses (excluding problems and research courses and OCG 695). For specialization in biological or chemical oceanography, OCG 501, 521, 540, and 561; for specialization in geological oceanography, OCG 540 and any two of OCG 501, 521, and 561; for specialization in physical oceanography, OCG 501, 510, 605, and 613 and any six credits of 500- and 600-level OCG courses outside the physical oceanography discipline. A Ph.D. qualifying examination is required of all doctoral students. This requirement is satisfied by completing, with a grade of B or better, the courses specified for the appropriate discipline.

Special Financial Aid

There is a limited number of assistantships for master's and doctoral candidates.

General Information

It is anticipated that approximately 25 students will be admitted to the program for the 1995–96 academic year.

Pharmacognosy

M.S., Ph.D. (Pharmaceutical Sciences) 401-792-2751

Graduate Faculty

Acting Chairperson: Professor Louis A. Luzzi, Ph.D., 1966, University of Rhode Island Professor Yuzuru Shimizu, Ph.D., 1963, Hokkaido University

Assistant Research Professor Lucie Maranda, Ph.D., 1987, University of Rhode Island Assistant Professor Lenore M. Martin, Ph.D., 1988, University of California, Los Angeles Adjunct Assistant Professor Mostafa M. Omar, Ph.D., 1982, University of Rhode Island

Specializations

Biosynthesis of drug plant constituents, natural product chemistry including the isolation and structural elucidation of materials of potential medicinal interest, screening of natural products for physiologically active agents including materials from both land and marine sources.

Master of Science

Admission requirements: GRE and bachelor's degree in pharmacy, chemistry, or biology.

Program requirements: thesis; A.C.S. placement examination (organic) to determine specific program requirement; PCG 445, 446, or equivalent; MCH 548, PCG 551, 552; and written master's examination.

Doctor of Philosophy (Pharmaceutical Sciences)

Admission requirements: GRE and master's degree in pharmacy, chemistry, or biology, or bachelor's degree in one of these with evidence of superior ability. Qualifying examination is required for candidates accepted without the master's degree.

Program requirements: PCG 551, 552; 633, 634, CHM 521 or equivalent. A candidate entering the Ph.D. program with a bachelor's degree must also meet the M.S. core course requirements.

Pharmacology and Toxicology

M.S., Ph.D. (Pharmaceutical Sciences) 401-792-2362

Graduate Faculty

Chairperson: Professor Zahir A. Shaikh, Ph.D., 1972, Dalhousie University, Canada Professor Robert L. Rodgers, Ph.D., 1977, University of Oklahoma

Professor Alvin K. Swonger, Ph.D., 1971, Dartmouth College

Associate Professor John R. Babson, Ph.D., 1980, Oregon State University

Associate Professor Clinton O. Chichester III, Ph.D., 1980, University of Rhode Island

Adjunct Professor Alexander R. Malcolm, Jr., Ph.D., 1977, University of Rhode Island

Adjunct Associate Professor Hans-Jurgen H. Barrach, Ph.D., 1973, Free University of Berlin

Adjunct Associate Professor Kim Boekelheide, M.D., Ph.D., 1980, Duke University

Adjunct Associate Professor Joseph M. Capasso, Ph.D., 1979, St. John's University

Adjunct Associate Research Professor Cecilia T. Giambalvo, Ph.D., 1975, University of Connecticut

Adjunct Associate Professor Herbert V. Levinsky, Ph.D., 1969, College of Agriculture, Vienna

Adjunct Associate Professor Ryoichi Nagata, Ph.D., 1991, Kagoshima University Adjunct Assistant Professor Sandra M. Baksi,

Ph.D., 1986, University of Maryland Adjunct Assistant Professor Douglas O. Fisher,

Ph.D., 1979, University of Rhode Island Adjunct Assistant Professor Dennis C. Hilliard, M.S., 1980, University of Rhode Island

Adjunct Assistant Professor Eugene Jackim, Ph.D., 1965, St. John's University

Adjunct Assistant Professor M.A. Ravi Kiron, Ph.D., 1986, Indian Institute of Science, Bangalore

Specializations

Biochemical and cardiovascular pharmacology; biochemical and forensic toxicology.

Master of Science

Admission requirements: GRE and bachelor's degree in pharmacy, biological sciences, or chemistry.

Program requirements: thesis; one course in mathematics (141 or equivalent); one course in statistics; PCL 444, 445, and 446 or equivalent; BCH 581 and 582; PCL 521 and 522 and two advanced pharmacology courses.

Doctor of Philosophy (Pharmaceutical Sciences)

Admission requirements: GRE and bachelor's or master's degree in pharmacy or

Program requirements: M.S. program requirements with two additional advanced pharmacology courses. In addition, a Ph.D. qualifying examination is required of all students admitted without an acceptable master's degree.

Pharmacy Administration

M.S. 401-792-2734

Graduate Faculty

Director of Graduate Studies: Professor Norman A. Campbell, Ph.D., 1972, University of Wisconsin

Professor Albert H. Taubman, Ph.D., 1971, University of Pittsburgh

Associate Professor Cynthia Willey Lessne, Ph.D., 1985, University of North Carolina, Chapel

Assistant Professor Susan Andrade, Sc.D., 1994, Harvard University

Adjunct Assistant Professor Paul E. Larrat, Ph.D., 1992, Brown University

Specializations

Development and utilization of pharmacy resources in health care systems involving the organization, financing, and delivery of health care services and materials and the legal and socioeconomic constraints.

Master of Science

Admission requirements: GRE or MAT and first professional degree in pharmacy. Program requirements: thesis; APS 599, 621, 622, 651, 652, STA 409, or equivalents.

Special Financial Aid

Fellowships from the American Foundation for Pharmaceutical Education are available.

Philosophy

M.A. 401-792-2418

Admissions to the M.A. program in philosophy have been suspended for the 1995-96 academic year, and no applications are being accepted. The frequency with which the following 500-level courses are offered depends on the needs of current students. For further information, please contact the department directly.

Graduate Faculty

Chairperson: Professor Galen A. Johnson, Ph.D., 1977, Boston University

Professor Yong Choon Kim, Ph.D., 1969, Temple University

Professor John F. Peterson, Jr., Ph.D., 1965, Indiana University

Professor Stephen D. Schwarz, Ph.D., 1966, Harvard University

Professor Fritz Wenisch, Ph.D., 1968, University of Salzburg

Professor Donald J. Zeyl, Ph.D., 1972, Harvard University

Associate Professor James G. Kowalski, Ph.D., 1975, University of Notre Dame

Associate Professor Lynn Pasquerella, Ph.D., 1985, Brown University

Assistant Professor Cheryl A. Foster, Ph.D., 1992, University of Edinburgh

Assistant Professor Mark Roberts, Ph.D., 1987, University of Dallas

Professor Emeritus John W. Hanke, Ph.D., 1967, Indiana University

Professor Emeritus William Young, B.Litt., 1958, University of Oxford

Specializations

Programs of study are offered in the following general areas: logic and philosophy of science, axiology, and history of philosophy.

Master of Arts

Admission requirements: GRE and 18 credits in basic philosophy courses. Students whose undergraduate preparation did not include at least 18 credits in basic philosophy courses will be required to take these in addition to the graduate program requirements.

Program requirements: for the thesis option, 24 credits in course work, six credits in master's thesis research. For nonthesis option, 30 credits in course work, comprehensive examination. Students in both options will normally include six credits in disciplines other than philosophy. Proficiency in a foreign language will be required if the student's program committee considers it essential for the thesis topic or the substantial paper involving significant independent research to be written by students choosing the nonthesis option.

Physical Education

M.S. 401-792-2976

Graduate Faculty

Director of Graduate Studies: Associate Professor 1. Richard Polidoro, D.P.E., 1969, Springfield College

Professor Greta L. Cohen, Ed.D., 1981, Boston University

Professor Thomas Manfredi, Ph.D., 1976, University of Massachusetts

Professor Raymond A. Nedwidek, Ed.D., 1965, University of Pittsburgh

Professor Robert J. Sonstroem, Ph.D., 1968, University of Minnesota

Associate Professor Leo E. O'Donnell, Ed.D., 1970, Temple University

Associate Professor John O'Leary, M.S., 1963, Southern Connecticut State College

Associate Professor Mark J. Rowinski, Ph.D., 1976, Medical College of Georgia

Associate Professor Diane Seleen, Ed.D., 1981, **Boston University**

Assistant Professor Linda S. Lamont, Ph.D., 1983, Kent State University Professor Emerita Lorraine E. Bloomquist, Ed.D.,

1974, Boston University

Specializations

Physical education, teacher education and administration, exercise science, adapted physical education, psychological aspects of sport and health, and international sport and physical education.

Master of Science

Admission requirements: MAT or GRE with B.S. degree in physical education, health and physical education, or health education. In exceptional cases, a candidate without a major in physical education or a related area but with a strong emphasis in physical education is accepted.

Program requirements: for thesis option, 30 credits, including PED 530, 531, 599, and six credits from physical education courses outside the area of specialization. For nonthesis option, 33 credits, including PED 530, 531, 591, and six credits from physical education courses outside the area of specialization; a written master's comprehensive examination. In addition to the program requirements, all students choosing the international sport and physical education specialization must select 12 credits from PED 526, 592, and REN 595 or PSC 431. Students choosing the nonthesis option in this specialization must select an additional six credits from PED 540, 560 and REN 595 or PSC 431.

Physical Therapy

401-792-5001

Director: Associate Professor Mark J. Rowinski, Ph.D., 1976, Medical College of Georgia Associate Professor James Agostinucci, D.Sci., 1988, Boston University

Associate Professor Peter R. Blanpied, Ph.D., 1989, University of Iowa

Assistant Professor Deirdre E. Robinson, M.S., 1989, Northeastern University

Assistant Professor Susan E. Roush, Ph.D., 1990, University of Washington

Clinical Assistant Professor Vicki L. Winter, M.S., 1988, University of Connecticut

The physical therapy program is an entry-level Master of Science program that prepares students for the state professional licensure examination. There is an emphasis on the development of clinical skill and research capability through the three-year graduate study plan.

Specializations

Research activities are focused on tissue biomechanics, neuromuscular control, muscle performance, and neurological rehabilitation. Clinical therapeutic skill is enhanced by faculty clinical practice and regional internships.

Master of Science

Admission requirements: GRE (aptitude test scores at the 50th percentile or above are desired) and a bachelor's degree with 12 credits of biological sciences (including a minimum of six credits of human anatomy and human physiology); physical sciences (preferably 16 credits, eight in chemistry and eight in physics); six credits of social sciences (including general and developmental psychology); three credits in mathematics (preferably precalculus); and three credits in communications (preferably writing or speech). Courses in abnormal psychology, computer science, exercise physiology, and statistics through ANOVA are strongly recommended but not required.

A clinical experience with a physical therapist is required. The experience should include observing and aiding a physical therapist in treatment or evaluation procedures. The minimum number of hours recommended for the clinical experience is 30-40 hours of voluntary or paid time. Most successful applicants demonstrate a diversity of clinical experience and a number of hours exceeding the minimum required in a physical therapy setting. The experience may be part of field work study for credit in a health-related discipline. Evidence of such experience should be documented by a recommendation from the physical therapist addressing the nature and duration of the experience, which should be submitted as part of the application process. Special recommendation forms and a form for the listing of completed prerequisites should be obtained by sending a self-addressed, stamped envelope to the physical therapy program. Baccalaureate requirements must be completed prior to final acceptance

into the master's program. The completed application package must be received by the second Friday in January. While applications will be reviewed as early as December 15, applicants will be admitted for the fall semester only.

Program requirements: a minimum of 83 credits of specified physical therapy course work, including 15 credits of internship. This program is a three-year plan of required course work, with the first two semesters at the 400 and 500 levels (29 credits), followed by four semesters and a summer session of graduate-level course work, including an intemship at an affiliated institution between the second and third years. As for all internships, the student may have to pay living expenses for summer internships. Internships and clinical course work of the first year also require immunization for the hepatitis B virus and instruction in HIV precautions, as required by OSHA standards. Immunization is at the student's expense. Though essentially a nonthesis program, a substantial paper involving significant independent research is required. A course in statistical methods, which includes ANOVA, correlation, and regression analysis, is required prior to or concurrent with the first semester of the second year of the program. All courses involving clinical skill development require skill competency testing via practical examination. All clinical competencies determined necessary by the faculty of the respective course must be demonstrated as adequately learned by the student in these courses for achievement of an adequate scholastic course grade. (See "Scholastic Standing," page 107.) Master's comprehensive examination is required. Courses required during the first two semesters may be waived, with an equivalent reduction in credits required for the degree, if acceptable grades have been earned in the course(s) prior to final acceptance into graduate status, and if approved by the program faculty.

Physics

M.S., Ph.D. 401-792-2633

Graduate Faculty

Chairperson: Professor Surendra S. Malik, Ph.D., 1960, Agra University Professor IIII C. Bonner, D.Sc, 1984, King's College, University of London Professor J. Scott Desjardins, Ph.D., 1959, Columbia University Professor Kenneth L. Hartt, Ph.D., 1963, University of Nebraska Professor Leonard M. Kahn, Ph.D., 1976, Brown University Professor Charles Kaufman, Ph.D., 1963, Pennsylvania State University Professor Stephen V. Letcher, Ph.D., 1964, **Brown University** Professor Alexander E. Meyerovich, D.Sc., 1985, Institute of Physical Problems, Moscow Professor Gerhard Muller, Ph.D., 1980, University of Basel Professor M. Peter Nightingale, Ph.D., 1978, University of Amsterdam Professor Jan A. Northby, Ph.D., 1966, University of Minnesota Professor Anthony C. Nunes, Ph.D., 1969, Massachusetts Institute of Technology Professor Albert Steyerl, Ph.D., 1971, Technische Universitat, Munich Associate Professor David R. Heskett, Ph.D., 1985, University of Pennsylvania Adjunct Professor Frank W. Cuomo, M.S., 1961, University of Rhode Island Adjunct Professor Louis Goodman, Ph.D., 1971, **Drexel University** Adjunct Professor Richard A. McCorkle, Ph.D., 1970, North Carolina State University Adjunct Assistant Professor Elizabeth Bozyan, Ph.D., 1985, University of Texas, Austin Professor Emeritus Stanley J. Pickart, Ph.D., 1958, University of Maryland

Specializations

Acoustics and optics: underwater acoustics; acoustic imaging; ultrasonics; acoustooptical transducers; fiber optics.

Astronomy: astrometry; differential photometry.

Condensed matter theory: low-dimensional physics; statistical mechanics; magnetism; surface magnetism; Fermi liquids, spin-polarized helium and hydrogen, nonlocal hydrodynamics; chemisorption; superconductivity; alloys; hydrogen in metals; defects in solids.

Interdisciplinary physics: computational physics; biophysics; magnetochemistry; dissipative chaos applied to marine and climate phenomena.

Liquid state: liquid crystals; liquid helium; ferrofluids; turbulence; superfluids.

Low-temperature physics: ionic mobilities; finite droplet effects; magnetic susceptibility; specific heats; magnetic cooling; quantum solids, liquids, and gases.

Neutron physics: ultra-cold neutrons; neutron optics.

Neutron scattering: small-angle scattering; solution scattering; surfaces and fine particles; crystal structure; amorphous magnets; high-temperature superconductors; inelastic scattering; phonons and spin

Nuclear theory: inverse scattering studies; few-nucleon studies; hypernuclei; weak interactions.

Surface physics: electronic and structural properties of surfaces including phase transitions using LEEDS, AUGER, X-rays, and BNL Synchrotron Facility.

Master of Science

Admission requirements: GRE and advanced test recommended; bachelor's degree with major in physics preferred.

Program requirements: PHY 510, 520, 525, 530, 560, 570, and 580 are required of all students. For both the thesis and the nonthesis options, the student will complete 30 credits, of which no more than six may be below the 500 level. For the nonthesis option, at least one course will require a substantial paper involving significant independent study, and the student must pass a final written and oral examination.

Doctor of Philosophy

Admission requirements: GRE and advanced test recommended; bachelor's degree with major in physics preferred. Master's degree is not required.

Program requirements: PHY 510, 520, 525, 530, 570, 580, 610, 625 (or 626), 630, 660, 670, and 680. There is no formal departmental language requirement, although the candidate's committee may require demonstration of language proficiency. Successful completion of a qualifying examination is required of all students.

Plant Science

M.S., Ph.D. (Biological Sciences) 401-792-2791

Graduate Faculty

Chairperson: Professor Richard J. Hull, Ph.D., 1964, University of California, Davis Director of Graduate Studies: Associate Professor loel M. Chandlee, Ph.D., 1984, North Carolina State University

Professor Noel lackson, Ph.D., 1960, University of Durham, England

Professor Walter C. Mueller, Ph.D., 1961, Cornell University

Associate Professor Dale T. Duff, Ph.D., 1967, Michigan State University

Associate Professor Larry Englander, Ph.D., 1973, Oregon State University

Associate Professor William R. Krul, Ph.D., 1967, **Purdue University**

Associate Professor Richard J. Shaw, Ph.D., 1966, University of Missouri

Associate Professor W. Michael Sullivan, Ph.D., 1981, University of Nebraska

Assistant Professor Brian K. Maynard, Ph.D., 1990, Cornell University

Assistant Professor Bridget A. Ruemmele, Ph.D., 1989, University of Minnesota

Adjunct Professor Raymond B. Taylorson, Ph.D., 1960, University of Wisconsin

Adjunct Assistant Professor Stephen L. Dellaporta, Ph.D., 1981, Worcester Polytechnic Institute

Adjunct Assistant Professor Eric M. Roberts, Ph.D., 1991, University of Texas, Austin Professor Emeritus Carl H. Beckman, Ph.D., 1953, University of Wisconsin

Specializations

Plant ecology and physiology: the management of designed landscapes emphasizing turfgrasses, woody ornamentals, and agricultural crops. Research involves plantsoil nutrient relations, plant propagation including cell and tissue culture, stress physiology, ecology of crop production, floriculture, and landscape ecology.

Plant molecular biology and genetics: genetics of disease and stress tolerance in ornamental plants, agronomic improvement of turfgrasses, physiology of gene action, and plant biotechnology.

Plant pathology (symbiology): mechanisms of disease resistance, fine structure of pathogen-host interactions, epidemiology of diseases, and mycorrhizal associations involving turfgrasses and woody ornamental plants.

Master of Science

Admission requirements: GRE, B.A. or B.S. degree with courses in agronomy, botany, chemistry, genetics, horticulture, mathematics, physics, plant pathology, and soils passed with grades of A or B. Significant deficiencies in these areas must be corrected without graduate program credit. An area of study corresponding to a field of program emphasis must be identified. Applicants are encouraged to contact a faculty member in their area of interest who may be willing to serve as their major professor. Initial contact may be made with the chairperson or graduate director of the Department of Plant Sciences.

Program requirements: for thesis option, a thesis based on independent experimental research and 24 credits of course work, including PLS 501 and 502. For nonthesis option (with consent of the department at time of admission), 36 credits of course work with a minimum of 14 credits in plant science or entomology including PLS 501 and 502. Three credits in experimental statistics and a written project involving significant independent work (PLS 591 or 592) are also required. A written comprehensive examination administered by the student's major professor and two additional members of the faculty (at least one of which must be from the Department of Plant Sciences) is required after most courses have been taken.

Doctor of Philosophy (Biological Sciences)

Admission requirements: GRE and, preferably, a master's degree in botony, genetics, plant pathology, or a plant sciences discipline (agronomy, horticulture, soils) and an undergraduate major in biological, agricultural, or physical sciences. Applicants admitted without an M.S. must pass a qualifying examination after earning 18-24 credits.

Program requirements: course work as determined by the student's program committee, including PLS 501 and 502; comprehensive examination; and defense of a dissertation.

Political Science

M.A., M.P.A. 401-792-2183

Graduate Faculty

Chairperson: Professor Gerry S. Tyler, Ph.D., 1972, Yale University

Professor Timothy M. Hennessey, Ph.D., 1968, University of North Carolina

Professor Alfred G. Killilea, Ph.D., 1969, University of Chicago

Professor Edgar C. Leduc, Ph.D., 1963, Indiana University

Professor Lawrence Rothstein, Ph.D., 1976, University of Massachusetts

Professor Arthur Stein, Ph.D., 1965, University of Pennsylvania

Professor Norman L. Zucker, Ph.D., 1960, Rutgers—The State University

Associate Professor Cynthia M. Hamilton, Ph.D., 1980, Boston University

Associate Professor Maureen Moakley, Ph.D., 1984, Rutgers-The State University

Associate Professor Nicolai N. Petro, Ph.D.,

1984, University of Virginia Assistant Professor Marc A. Genest, Ph.D., 1992, Georgetown University

Adjunct Professor William E. Hudson, Ph.D., 1976, Brown University

Adjunct Professor Mark S. Hyde, Ph.D., 1972, Michigan State University

Adjunct Professor Victor L. Profughi, Ph.D., 1967, University of Pittsburgh

Adjunct Associate Professor Francis J. Leazes, Jr., Ph.D., 1984, University of Connecticut

Master of Arts

Specializations: international relations, comparative politics, American politics, and public policy.

Admission requirements: generally, GRE, GMAT, or MAT, and undergraduate credit in basic political science and political theory.

Program requirements: a minimum of 30 credits including PSC 553, 580 or 584, and 583 for both thesis and nonthesis options; nonthesis option requires one course including a substantial paper requiring significant independent research and an oral examination in addition to the comprehensive examination.

Master of Public Administration

The Rhode Island Master of Public Administration Program (RIMPA) leads to the M.P.A. degree conferred by the University of Rhode Island. It is a collaborative undertaking, governed and offered by a committee of university faculty that includes adjunct faculty from Rhode Island College and Providence College. The RIMPA is offered at URI's Providence campus and provides federal, state, and city officials and agencies easy access to its instructional programs and research expertise. In addition to delivering its degree and certificate programs, internships, and workshops, the RIMPA faculty conducts research into the formation and implementation of public policy and the administration of public and nonprofit agencies. Current research areas include public professional ethics, the training of public managers, water resource management, the governance and financing of nonprofits, state prison administration, the public administration of technology, industrial policy at the state and national levels, and case management in mental health agencies.

Admission requirements: generally, GRE, MAT, or GMAT at 50th percentile or above, and undergraduate credit in basic political science.

Program requirements: nonthesis program; one course including a substantial paper requiring significant independent research; comprehensive examination; internship; minimum total of 36 credits including PSC 501, 502, 503, 505, 506, 524, and 573. Competency in computer science and statistics is required and may be demonstrated by completion of a basic course at the undergraduate level.

Students in the RIMPA program taking elective courses at the participating institutions will be governed by the same regulations effective for courses taken at URI. Under this rule, grades (including failures) for all graduate courses taken at a participating institution will be included in the grade point average and will become part of the student's record.

M.P.A. and M.L.I.S. Cooperative Program

A cooperative program permits joint enrollment in the Master of Public Administration and the Master of Library and Information Studies programs. The integrated pursuit of the two degrees makes it possible for nine credits of appropriately selected course work from one program to serve as electives in the other, and for six credits of such course work to be applied in the opposite direction. Thus, when planned and taken jointly, the two programs can be completed with a total of 63 credits.

Admission requirements: GRE and other requirements listed for M.P.A. and M.L.I.S. Applicant must apply and be accepted in both programs. Applications to both programs must indicate M.P.A./M.L.I.S. as the field of specialization.

Program requirements: Each student must complete the required core courses for both programs plus three credits of PSC 590 for the M.P.A. After consultation with, and approval of, both departments, students must file separate programs of study for each degree, indicating the courses to be jointly counted. Each student must pass the separate comprehensive examination for each degree. A student who fails to complete one of the programs may, of course, complete the other in accordance with the separate program of study.

Psychology

M.S., Ph.D. 401-792-2193

Graduate Faculty

Chairperson: Professor Janet M. Kulberg, Ph.D., 1967, George Peabody College, Vanderbilt University

Professor Allan Berman, Ph.D., 1968, Louisiana State University

Professor Henry B. Biller, Ph.D., 1967, Duke University

Professor Susan A. Brady, Ph.D., 1975, University of Connecticut

Professor Jerry L. Cohen, Ph.D., 1973, University of Illinois

Professor Charles E. Collyer, Ph.D., 1976, Princeton University

Professor David Faust, Ph.D., 1979, Ohio University

Professor Paul R. Florin, Ph.D., 1981, George Peabody College, Vanderbilt University

Professor Richard J. Gelles, Ph.D., 1973, University of New Hampshire

Professor Lawrence C. Grebstein, Ph.D., 1964, University of Kentucky

Professor Ira Gross, Ph.D., 1967, University of Illinois

Professor Albert J. Lott, Ph.D., 1958, University of Colorado

Professor Bernice Lott, Ph.D., 1953, University of California, Los Angeles

Professor Patricia J. Morokoff, Ph.D., 1980, State University of New York, Stony Brook

Professor James O. Prochaska, Ph.D., 1969, Wayne State University

Professor Kathryn Quina, Ph.D., 1973, University of Georgia

Professor Albert Silverstein, Ph.D., 1963, University of California; Berkeley

Professor Nelson F. Smith, Ph.D., 1963, Princeton University

Professor John F. Stevenson, Ph.D., 1974, University of Michigan

Professor Dominic Valentino, Ph.D., 1971, University of California, Riverside

Professor Wayne F. Velicer, Ph.D., 1972, Purdue University

Professor W. Grant Willis, Ph.D., 1984, University of Georgia

Professor Alan Willoughby, Ph.D., 1959, University of Connecticut

Associate Research Professor Joseph Fava, Ph.D., 1990, University of Rhode Island

Associate Professor Lisa L. Harlow, Ph.D., 1985, University of California, Los Angeles

Associate Professor Laurie Ruggiero, Ph.D., 1988, Louisiana State University Assistant Professor Shanette M. Harris, Ph.D., 1989, Virginia Polytechnic Institute and State University

Adjunct Professor David Abrams, Ph.D., 1981, **Brown University**

Adjunct Professor John J. Colby, Ph.D., 1974, University of Rhode Island

Adjunct Professor Joseph S. Rossi, Ph.D., 1984, University of Rhode Island

Adjunct Associate Professor Douglas Bernon, Ph.D., 1987, California School of Professional Psychology

Adjunct Associate Professor I. Eugene Knott, Ph.D., 1975, University of Maryland Adjunct Associate Professor Robert LaForge, Sc.D., 1987, Johns Hopkins University Adjunct Associate Professor Roger Mitchell,

Ph.D., 1980, University of Maryland Adjunct Associate Professor Peter Monti, Ph.D., 1974, University of Rhode Island

Adjunct Assistant Professor James Arruda, Ph.D., 1994. University of Rhode Island Adjunct Assistant Professor Denise DeZolt,

Ph.D., 1992, Kent State University Adjunct Assistant Professor Bette LaSere Erickson, Ed.D., 1976, University of Massachusetts

Adjunct Assistant Professor E. Grace Frenzel, Ph.D., 1979, Colorado State University Adjunct Assistant Professor Katherine C. Haspel, Ph.D., 1981, University of Rhode Island Adjunct Assistant Professor Judith Lubiner,

Ph.D., 1989, University of Rhode Island Adjunct Assistant Professor Joseph A. Maxwell, Ph.D., 1986, University of Chicago Adjunct Assistant Professor Colleen Redding,

Professor Emeritus Peter F. Merenda, Ph.D., 1957, University of Wisconsin Professor Emeritus William T. Vosburgh, Ph.D., 1965, Syracuse University

Ph.D., 1993, University of Rhode Island

Specializations

Programs are offered in clinical, experimental, and school psychology. Specializations are offered within each program. The clinical program encourages students to organize their courses so as to foster their developing career needs. Thus, one is encouraged to develop specific interests and competencies in areas such as health psychology, substance abuse, child/clinical, community, neuropsychology, applied methodology, gender issues, and family

systems. Students in the experimental program tend to concentrate in one of the following five areas: 1) human perception and learning; 2) conditioning and behavior change; 3) psychophysiology; 4) methodology and quantitative psychology; and 5) personality/social/community bases of behavior. Additional individual specialties can be developed within each of the program areas.

Master of Science (School Psychology Only)

Admission requirements: GRE, advanced test recommended. Undergraduate major in psychology recommended. Applicants are admitted for the fall semester only. The completed application package must be received by February 15.

Program requirements: nonthesis-internship; total of 60 credits with a minimum of 30 for the master's degree plus additional credits for certification as a school psychologist; one course with a major paper involving significant independent research; and a written comprehensive examination.

This program is accredited by NCATG/ NASP and NASDTEC, and meets the reguirements for certification in Rhode Island.

Doctor of Philosophy (Clinical, Experimental, and School Psychology)

Admission requirements: GRE, advanced test recommended; evidence of research competency. Applicants are admitted for the fall semester only. The completed application package must be received by January 20 for clinical, by February 15 for school, and by March 15 for experimental. Prospective applicants are asked to address initial inquiries concerning the desired specialization to the department. The formal application materials can be obtained from the Graduate School Office, but the completed application package must be sent to the department. Applicants to the clinical and school programs are evaluated on the basis of previous academic achievement, GRE scores, previous life experience, previous applied clinical and research experience, letters of recommendation, personal interview, and projected balance between applicant and program needs.

Due to limited facilities, new admissions to the doctoral programs must be limited to a small number per year. Finalists in the school and clinical specialization must participate in a personal interview to complete the evaluation process. Although test scores and cumulative averages are not the sole criteria for admission to the clinical program, those with overall quality point averages of less than 3.00 (on a 4.00 scale), or whose verbal and quantitative GRE scores do not total above 1200, are advised that there is little chance for admission.

Program requirements: completion of a minimum of 90 credits (72 plus 18 for dissertation). Language requirement optional depending on requirements set forth by the student's program committee. Research course requirements: a minimum of two courses in statistics (STA/PSY 532, PSY 533) and a research methods course (PSY 611). The research competency requirement may be met by successfully defending a master's thesis or by successfully completing a research competency project under the direction of the major professor. The research competency project option is limited to those who have nonthesis master's degrees in psychology. Students who successfully complete the thesis option will earn a Master of Arts degree in psychology. A Ph.D. qualifying examination is required of all doctoral students entering without the master's degree. This requirement is met by completing four core courses from STA/PSY 532, PSY 533, 611, and those numbered 601-609, with a grade of B or better. These courses are usually completed prior to earning 24-30 credits. For students in the applied areas (clinical and school), at least one core course must be completed in each of the following content areas of psychology: biological bases of behavior; cognitive and affective bases; social bases; individual differences; and history and systems of psychology.

The objective of our Ph.D. program is to give our students the knowledge and skills they will need to be effective psychologists in their chosen area. Scientific training and research experience as well as knowledge and technical skills are a part of each student's program, but his or her program is individually designed around his or her needs and goals.

Both the clinical and the school psychology programs are accredited by the American Psychological Association. Both programs subscribe to the scientist-practitioner model, and thus course requirements are consistent with maintaining such accreditation. Practicum and individual research projects can be specifically tailored to help the student prepare for the professional role of his or her choice. These programs also have a strong experiential base, including field activity in each year. Students are expected to be involved in research for a substantial portion of their program.

The department emphasizes a close working relationship between faculty and students. No single theoretical or philosophical model is espoused.

Resource Economics

M.S., Ph.D. 401-792-2471

MASTER OF SCIENCE

Graduate Faculty

Chairperson: Professor Thomas F. Weaver, Ph.D., 1966, Cornell University

Director of Graduate Studies: Professor James J. Opaluch, Ph.D., 1979, University of California, Berkeley

Professor James L. Anderson, Ph.D., 1983, University of California, Davis

Professor John M. Gates, Ph.D., 1969, University of California

Professor Thomas A. Grigalunas, Ph.D., 1972, University of Maryland

Professor Jon G. Sutinen, Ph.D., 1973, University of Washington

Professor Timothy J. Tyrrell, Ph.D., 1979, Cornell University

Associate Professor Stephen K. Swallow, Ph.D., 1988, Duke University

Associate Professor Cathy R. Wessells, Ph.D., 1990, University of California, Davis

 Associate Professor Dennis G. Wichelns, Ph.D., 1986, University of California, Davis

Specializations

Environmental economics, commercial fisheries management, international fisheries development, fisheries marketing and trade, fisheries business economics, coastal zone land use and management, quality of the marine environment, aquaculture economics, offshore oil and gas management, and natural resource pricing policies.

Admission Requirements

The GRE is required. A strong undergraduate record in economics or business is highly desirable.

Program Requirements

For the thesis option, 24 credits including REN 534, a written comprehensive examination, and thesis. For the nonthesis option, 34 credits including REN 534, a written comprehensive examination, and REN 598, with a substantial paper requiring significant independent research.

DOCTOR OF PHILOSOPHY

This program is administered by the Department of Natural Resource and Environmental Economics, with advice by graduate faculty from several disciplines.

Graduate Faculty

Natural Resource and Environmental Economics: Professor Weaver, chairperson. Professors J. Anderson, Gates, Grigalunas, Opaluch, Sutinen, and Tyrrell; Associate Professors Swallow, Wessells, and Wichelns.

Economics: Professors Burkett and Ramsay; Associate Professors Lardaro, Mead, C. Miller, and Suzawa.

College of Business Administration: Professors Comerford, Della Bitta, N. Dholakia, Jarrett, and Mojena; Associate Professors Dash and Lord.

Specializations

Environmental economics, commercial fisheries management and marketing, international fisheries development, coastal zone land use and management, quality of the marine environment, aquacultural economics, offshore oil and gas management, and natural resource pricing.

Admission Requirements

GRE, 6 credits in statistics, and the following courses or their equivalents—ECN 327, 328, and 375.

Program Requirements

The Ph.D. qualifying examination is required of students admitted without the master's degree. ECN 527, 576; REN 534, 602, 628, 630, 634, 635, and 676. Additional courses may be elected from appropriate offerings in economics, resource economics, engineering, geography, oceanography, mathematics, political science, statistics, computer science, and management science. The dissertation will be written on a problem involving marine resources or an associated industry, such as minerals, petroleum, fisheries, water, transportation, recreation, or waste disposal.

Spanish

M.A. 401-792-5911

Graduate Faculty

Chairperson: Professor John M. Grandin, Ph.D., 1970, University of Michigan

Director of Graduate Studies: Professor Mario F. Trubiano, Ph.D., 1979, University of Massachusetts

Professor David M. Gitlitz, Ph.D., 1968, Harvard University

Professor Robert C. Manteiga, Ph.D., 1977, University of Virginia

Professor Michael Navascués, Ph.D., 1971, Rutgers-The State University

Associate Professor Thomas D. Morín, Ph.D., 1975, Columbia University

Associate Professor Clement A. White, Ph.D., 1987, Brown University

Specializations

The Master of Arts in Spanish is designed for those who wish to perfect their undergraduate achievement in the general area of Hispanic studies, including language mastery and understanding of literature in the total context of civilization and culture. The literary production of Spain, Spanish America, and the Spanish-speaking peoples of the United States will be studied. Any one of these areas could provide a field for specialization.

Master of Arts

Admission requirements: undergraduate major in Spanish or equivalent, including 12 credits in Spanish or Hispanic-American literature. Qualified students may be admitted with less than 12 credits but must make them up without graduate credit.

Program requirements: all work carried out in Spanish. For thesis option, 30 credits including six thesis research credits. For nonthesis option, 30 credits. All candidates must pass a written comprehensive examination and an oral comprehensive examination. Course work may be completed on campus or through the URI summer study program in Salamanca, Spain, or a combination of both.

Speech-Language Pathology and Audiology

M.A., M.S. 401-792-5969

Graduate Faculty

Chairperson: Associate Professor Jay Singer, Ph.D., 1976, Case Western Reserve University

Professor Barbara Culatta, Ph.D., 1975, University of Pittsburgh

Professor Stephen D. Grubman-Black, Ph.D., 1972, State University of New York, Buffalo Associate Professor John P. Preece, Ph.D., 1985, University of Iowa

Assistant Professor Ovetta L. Harris, Ph.D., 1992, University of Massachusetts

Specializations

Audiology and speech-language pathology.

Master of Arts and Master of Science

Admission requirements: 19 undergraduate credits in communicative disorders (always including CMD 372, 373, 374, 375, 376, and 465, or equivalents). Although cumulative average is not the sole criterion for admission to the graduate programs in speech-language pathology and audiology, those applicants with overall quality point averages of less than 3.00 (on a 4.00 scale) may be advised to address background deficits to gain admission to the program. The completed application package must be received by October 15 for spring admission and March 1 for fall admission.

Program requirements: for M.A. in speech-language pathology (46 credits), thesis; CMD 504; 26 credits in speech pathology and seven credits in audiology. For M.A. in audiology (46 credits), thesis; CMD 504; 26 credits in audiology and seven credits in speech pathology. For M.S. in speech-language pathology (46 credits), no thesis; written comprehensive examination; CMD 504; 32 credits in speech pathology and seven credits in audiology. For M.S. in audiology (46 credits), no thesis; written comprehensive examination; CMD 504; 32 credits in audiology and seven credits in speech pathology. For either the M.A. or M.S. program in speechlanguage pathology or audiology, students must also complete sufficient directed observations and supervised clock hours of practicum to satisfy the requirements of the American Speech-Language Hearing Association. Because program requirements in both speech-language pathology and audiology include clinical responsibilities, the average length of time to complete any of the programs is two academic years.

Accelerated Bachelor's-Master's Degree Program in Speech-Language Pathology or Audiology

University of Rhode Island senior undergraduate majors in communicative disorders who have met requirements for early acceptance in the graduate program of either speech-language pathology or audiology may follow a special sequence of graduate-level course work and clinical practicum during their senior year. If eligible, following the award of the Bachelor of Science degree in communicative disorders, students may complete a 30-semester-hour master's degree (rather than the usual 46-semester-hour master's degree) in one year of full-time graduate study. This option, which requires careful sequencing of senior and graduate course work, is not available to students from other undergraduate institutions nor to students who elect part-time graduate study prior to completion of the fifth year.

Admission requirements: URI sixthsemester standing in communicative disorders with all major requirements completed and 25 elective credits remaining; a 3.00 cumulative quality point average and 3.20 in the major through the fifth semester; and two letters of recommendation from URI communicative disorders faculty.

Program requirements: for students who have taken the specified 25 credits (16 of which must be at the 500 level) of communicative disorders course work in the senior year to complete the bachelor's degree in communicative disorders, 30 credits of course work in the fifth year (postbaccalaureate) at the 500 level. Specific course requirements are as stated in the regular two-year master's program.

Statistics

M.S. 401-792-2701

Graduate Faculty

Chairperson: Professor Edmund A. Lamagna, Ph.D., 1975, Brown University

Section Head: Professor R. Choudary Hanumara, Ph.D., 1968, Florida State University Professor James F. Heltshe, Ph.D., 1973, Kansas State University

Assistant Professor Colleen Kelly, Ph.D., 1991, University of California, San Diego Professor Emeritus Edward J. Carney, Ph.D., 1967, Iowa State University

Specializations

Experimental design, sampling, ecological statistics and biostatistics, statistical computation, simulation, multivariate analysis, nonparametric methods, classification and discrimination, analysis of variance, bootstrap and jackknife estimation, sequential methods.

Master of Science

Admission requirements: bachelor's degree including the equivalent of MTH 141, 142 Introductory and Intermediate Calculus with Analytic Geometry; MTH 243 Calculus for Functions of Several Variables; MTH 215 Introduction to Linear Algebra; CSC 201 Introduction to Computing; STA 409, 412 Statistical Methods in Research I and II. GRE; advanced test in mathematics or undergraduate field is desirable.

Thesis option program requirements: a minimum of 24 credits (exclusive of thesis) including MTH 451, 452, either STA 501 or 502, and at least nine additional credits selected from STA 500, 501, 502, 520, 541, 542, 550, 592, 611.

Nonthesis option program requirements: 33 credits distributed as follows—1) MTH 451, 452, and either STA 501 or 502; 2) at least nine credits selected from STA 500, 501, 502, 520, 541, 550, 592, 611; 3) at least six of the remaining credits must be at the 500 level or above (exclusive of STA 591); 4) the above course work must include at least one course that requires a substantial paper involving significant independent study; and 5) written comprehensive examination.

Doctor of Philosophy

See Applied Mathematical Sciences on page 111.

General Information

Programs of study can be designed for individuals who are employed on a fulltime basis.

Teacher Certification

401-792-5930

Students who did not obtain Rhode Island Teacher Certification as part of their undergraduate studies may do so by being admitted to a certification program or a master's degree program with a certification option and satisfactorily completing a prescribed set of courses in the appropriate fields. Applicants for elementary or one of the secondary fields described below must apply as master's degree students. Applicants for early childhood education, music education, resource development (agriculture), or school library media certification may indicate the specific TCP program code on the application forms and submit two official transcripts of all prior academic work, showing receipt of the bachelor's degree, plus a personal statement of objectives and two letters of recommendation.

Applications for the education department programs are reviewed each May; admission is competitive. If space becomes available for any particular program, completed applications for that program may be reviewed subsequently.

A test of basic skills is required prior to action on the application. The NTE Communications and General Knowledge tests are required as part of the admissions process for the resource development (agriculture) and music education programs. For all other teacher education programs, the basic skills requirement consists of mathematics and writing tests administered by the Department of Education each spring. Please contact the appropriate department(s) in the following list for additional information relative to this requirement. An interview is also required of all applicants. Students admitted to the TCP program are governed by the same academic standards as matriculated graduate students.

Further information can be obtained from the Office of Teacher Education at 401-792-5930 or from the following areas of specialization:

Early Childhood Education (510): Associate Professor David A. Caruso, Chairperson, Department of Human Development and Family Studies, 401-792-2150

Elementary Education (525): Associate Professor Betty Young, Department of Education, 401-792-4150

Secondary Education (525)

English: Associate Professor Richard G. Nelson, Department of Education, 401-792-4165 Mathematics: Professor John V. Long, Jr., Department of Education, 401-792-4149 Science: Professor William Croasdale, Department of Education, 401-792-4161 Social Studies: Professor Robert W. MacMillan. Department of Education, 401-792-4155 Languages: Associate Professor JoAnne Hammadou, Department of Modern and Classical Languages and Literatures, 401-792-4712

Music Education (070): Associate Professor Carolyn Livingston, Department of Music, 401-792-2431

Resource Development (Agriculture): Associate Professor Anthony T. Mallilo, Department of Fisheries, Animal and Veterinary Science, 401-792-2981

School Library Media (940): Assistant Professor Cheryl McCarthy, Graduate School of Library and Information Studies, 401-792-2878

Textiles, Fashion Merchandising, and Design

M.S. 401-792-4574

Graduate Faculty

Chairperson: Professor Linda M. Welters, Ph.D., 1981, University of Minnesota Associate Professor Martin J. Bide, Ph.D., 1979, University of Bradford, England Associate Professor Misako Higa, Ph.D., 1973, University of Minnesota Associate Professor Patricia A. Helms, Ph.D., 1971, Florida State University

Associate Professor Margaret Ordoñez, Ph.D., 1978, Florida State University

Assistant Professor Yvette Harps-Logan, Ph.D., 1990, Virginia Polytechnic Institute and State University

Adjunct Professor Joy Emery, M.A., 1966, Ohio State University

Adjunct Professor Laurence F. Gross, Ph.D., 1976, Brown University

Adjunct Professor Paul Hudon, Ph.D., 1971, Georgetown University

Adjunct Professor Alexander J. Patton, Ph.D., 1972, University of Rhode Island

The department offers a wide variety of individualized programs in close association with other departments (Art, Chemistry, Education, History, Human Development and Family Studies, Marketing) and with various social science fields.

Master of Science

Specializations: textile science, historic textiles and costume, textile conservation, and fashion merchandising.

Admission requirements: GRE and a bachelor's degree with adequate preparation for the proposed area of study.

Program requirements: for thesis option, completion of a minimum of 30 credits, including six credits of thesis research. For nonthesis option, completion of a minimum of 33 credits, half of which must be TMD courses numbered 500 or above, including at least one course that requires a substantial paper involving significant independent study, and written comprehensive examinations, TMD 510 is a requirement for all students. For the textile science specialization, TMD 503 and 510; half of the remaining elective credits must be from TMD courses numbered 500 or above. For the historic textiles and costume specialization, TMD 510, 520, 524, and a supervised internship (TMD 530, 2-4 credits); half of the remaining elective credits must be from TMD courses numbered 500 or above. A minimum of nine credits is required to achieve a competency level in an allied field such as art history, history, or anthropology; this may result in a program of more than 30 credits. The committee may elect to waive this requirement if the candidate has adequate preparation in the allied field as an undergraduate. Candidates lacking undergraduate

courses in textile science and historic costume may be required to make up deficiencies without graduate credit. For the fashion merchandising specialization, TMD 510 and 524; six credits to be selected from TMD 532, 542, and 552; half of the remaining elective credits must be from TMD courses numbered 500 or above. Candidates lacking undergraduate courses in textile science and fashion merchandising may be required to make up deficiencies without graduate credit.

Zoology

M.S., Ph.D. (Biological Sciences) 401-792-2372

Graduate Faculty

Chairperson: Professor Robert C. Bullock, Ph.D., 1972, Harvard University Professor Harold D. Bibb, Ph.D., 1969, University of Iowa

Professor J. Stanley Cobb, Ph.D., 1969, University of Rhode Island

Professor Robert F. Costantino, Ph.D., 1967, Purdue University

Professor Marian R. Goldsmith, Ph.D., 1970, University of Pennsylvania

Professor Frank H. Heppner, Ph.D., 1967, University of California, Davis

Professor Robert B. Hill, Ph.D., 1957, Harvard University

Professor Kerwin E. Hyland, Jr., Ph.D., 1953, **Duke University**

Professor Gabriele Kass-Simon, D.Phil., 1967, University of Zurich

Professor Steffen H. Rogers, Ph.D., 1968, Vanderbilt University

Professor C. Robert Shoop, Ph.D., 1963, Tulane University

Professor Jennifer L. Specker, Ph.D., 1980, Oregon State University

Professor Howard E. Winn, Ph.D., 1955, University of Michigan

Associate Research Professor David A. Bengtson, Ph.D., 1972, University of Rhode Island Associate Professor John P. Mottinger, Ph.D.,

1968, Indiana University Associate Professor Saran Twombly, Ph.D., 1983, Yale University

Adjunct Professor Donald C. Miller, Ph.D., 1965, **Duke University**

Adjunct Professor Ruth D. Turner, Ph.D., 1954, Radcliffe College, Harvard University

Adjunct Assistant Professor Clifford H. Katz. Ph.D., 1982. University of Connecticut

Specializations

Acarology, animal behavior, animal diversity, cell and tissue biology, developmental biology, ecology, endocrinology, genetics (ecological, molecular, population), herpetology, ichthyology, limnology, mammalogy, marine biology, neurobiology, ornithology, parasitology, physiology, radioecology, reproductive biology, systematics, and taxonomy.

Master of Science

· Admission requirements: GRE and bachelor's degree with major in zoology, biology, or allied field. Applicants are normally admitted for the fall semester only. The completed application package should be received by April 15. For consideration for financial aid, the application package should be received by February 1.

Program requirements: thesis.

Doctor of Philosophy (Biological Sciences)

Admission requirements: master's degree is not required. GRE and bachelor's degree with major in zoology, biology, or allied field. Applicants are expected, but not required, to have a reading knowledge of two languages in addition to their native language. Applicants are normally admitted for the fall semester only. The completed application package should be received by April 15. For consideration for financial aid, the application package should be received by February 1.

Program requirements: dissertation, qualifying examination required for all candidates except holders of M.S. degree. Although there is no departmental language requirement, the candidate's committee may require demonstration of proficiency in one or two languages other than the candidate's native language. Comprehensive examination.

COURSES OF INSTRUCTION



ermanent undergraduate and graduate courses offered at the University of Rhode Island are listed on the following pages by subject in alphabetical order. If any subject cannot be located readily, refer to the Index.

Courses numbered 001–099 are prefreshman and special undergraduate courses, and do not carry bachelor's degree credit. Those numbered 100–299 are lower-division undergraduate courses, and those numbered 300–399 are upperdivision undergraduate courses. The 400level courses are generally limited to juniors and seniors majoring in that field, but are open to other advanced undergraduates and to graduate students with permission.

The 500-level courses are graduate courses with a bachelor's degree usually a prerequisite, but qualified seniors and honors students are admitted with permission. These courses should make up the majority of course work for students working toward a master's degree. Courses at the 600 level are advanced graduate courses. The 900-level courses are special types of graduate courses for which no degree

credit is given. They include courses offered to remedy deficiencies as well as workshops, institutes, and courses offered one time only by visiting faculty.

Courses with two numbers—e.g., ACC 201, 202-indicate a year's sequence; the first course is either a prerequisite for the second, or at least the two cannot be taken in reverse order without special permission. Parentheses after a course number enclose either the old course number or, in cases of multiple listings, the departments and numbers under which the course is also offered. The roman numeral indicates the semester the course will be offered, with SS for Summer Session. The arabic numeral indicates the credit hours, and distribution of class hours each week is in parentheses. S/U credit signifies a course in which only satisfactory or unsatisfactory grades are given. The instructor's name follows the course description.

Courses that meet the General Education requirements are designated with a letter in parentheses indicating the appropriate group, as follows:

- (A) Fine Arts and Literature
- (F) Foreign Language and Culture
- (L) Letters
- (C) English Communication (General)
- (Cw) English Communication (Written)
- (M) Mathematics
- (N) Natural Sciences
- (S) Social Sciences

The Schedule of Courses is issued by the Office of the Registrar immediately before the early registration period for each semester and again at least two weeks before the first week of classes. It lists the specific courses to be offered that semester with the time of meeting, location, and instructor assigned for the section.

Accounting (ACC)

Chairperson: Professor Schwarzbach

201, 202 Elementary Accounting I, II (I and II, 3 each) 201: Basic concepts and systems used in financial accounting for business organizations. 202: Basic techniques and systems used by management accountants in budgeting, cost accounting, cost analysis and control. (Lec. 3) Staff

311, 312 Intermediate Accounting I, II (I and II, 3 each) 311: Theoretical aspects of accounting principles, emphasis on current and fixed assets and the corporate structure. 312: Continuation including investments, liabilities, financial statements, application of funds, cash flow, and price-level impacts. (Lec. 3) Pre: 202. Staff

321 Cost Accounting (1, 3) Cost and managerial accounting systems and concepts including cost allocation, actual and standard cost systems, cost and profit planning, and control systems. (Lec. 3) Staff

371, 372 Directed Study in Accounting (I and II, 1–3 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. Staff

415 Accounting Computer Systems (I.and II, 3) Accounting information systems and use of

the computer for decision making; emphasis on sources of information and employment of analytical tools in solving accounting problems. (Lec. 3) Pre: 312, 321, or permission of instructor. Staff

431 Advanced Accounting (II, 3) Accounting principles and policies for governmental and nonprofit organizations, multinational and multidivisional organizations, partnerships, and other complex organizational structures. (Lec. 3) Pre: 312. Staff

443 Federal Tax Accounting (II, 3) Federal laws, regulations, and other authorities affecting taxation of individuals. (Lec. 3) Pre: 202. Staff

461 Auditing (1, 3) Auditing standards, procedures, programs, working papers, and internal control. (Lec. 3) Pre: 312. Staff

493 Internship in Accounting (I and II, 3) Approved, supervised work experience with participation in accounting and problem solving

related to accounting. Fifteen working days (or 120 hours). (Practicum) Pre: junior standing and proposal approved by the Department of Accounting. May be repeated for credit. Not for graduate credit. S/U only. Staff

535 Advanced Problems in Accounting (II, 3) General and specialized accounting problems that constitute the subject matter of C.P.A. examinations. (Lec. 3) Pre: 431. Staff

544 Taxation of Corporations and Shareholders (II, 3) Examination of the tax laws affecting corporations and shareholders. Includes law governing corporate formation, liquidating and nonliquidating distributions, reorganizations, taxes on corporation accumulations, and planning of transactions for tax compliance and minimization. (Lec. 3) Pre: 443 or permission of instructor. Matoney

562 Advanced Auditing (II, 3) Statements on auditing standards, auditing electronic systems, auditor's reports, statistical sampling in auditing, regulations of SEC, and cases in auditing. (Lec. 3) Pre: 461. Boyle

610 Financial Accounting (I and II, 4) Covers basic accounting principles, accounting systems design, and financial statement analysis. Includes principles of responsibility accounting and budgeting. (Lec. 4) Pre: mathematics or statistics, ECN 590, MGS 520 and 530. Staff

611 Managerial Accounting (1 or II, 3) Determination of accounting information for the purposes of decision making, control, and evaluation with emphasis on decision models using accounting information. (Lec. 3) Pre: 610, MGS 520 and 530. Staff

618 Current Accounting Theory (I, 3) Critical examination of accounting theory and practice to develop research techniques with emphasis on financial accounting. (Lec. 3) Pre: 311 and 312. Staff

Course	e Codes	FIN	Finance	MTC	Medical Technology
ACC	Accounting	FST	Fisheries Science and Technology	MCH	
ADE	Adult and Extension Education	FSN	Food Science and Nutrition	MIC	Microbiology
AAF	African and Afro-American Studies	FRN	French	MSC	Military Science
AVS	Animal and Veterinary Science	GEG	Geography	MUS	Music
APG	Anthropology	GEL	Geology	NRS	Natural Resources Science
AMS	Applied Mathematical Sciences	GER	German	NES	New England Studies
APS	Applied Pharmaceutical Sciences	GRK	Greek	NUR	Nursing
ASP	Aquacultural Science and Pathology	HLT	Health	OCE	Ocean Engineering
ART	Art	HSA	Health Services Administration	OCG	
ARH	Art History	HBW	Hebrew	PCG	Pharmacognosy
AST	Astronomy	HIS	History	PCL	Pharmacology and Toxicology
BGS	Bachelor of General Studies	HEC	Home Economics	PHP	Pharmacy Practice
BCH	Biochemistry	HED ,	Home Economics Education	PHL	Philosophy
BIO	Biology	HPR	Honors Program	PED	Physical Education
BOT	Botany	HDF	Human Development and Family	PHT	Physical Therapy
BUS	Business		Studies	PHY	Physics
BAC	Business Analysis and Computing	HSS	Human Science and Services	PLS	Plant Sciences
BSL	Business Law	IME	Industrial and Manufacturing	PSC	Political Science
CHE	Chemical Engineering		Engineering	POR	Portuguese
СНМ	Chemistry	INS	Insurance	PLA	Prior Learning Assessment
CHN	Chinese	IRE	Irish	PSY	Psychology
CVE	Civil and Environmental	ITL	Italian	RLS	Religious Studies
	Éngineering	JPN	Japanese	RDV	Resource Development
CLA	Classics	JOR	Journalism	RDE	Resource Development Education
CMS	Communication Skills	LRS	Labor and Industrial Relations	REN	Resource Economics
COM		LAR	Landscape Architecture	RUS	Russian
	Communicative Disorders	LAN	Languages	SOC	Sociology
CPL	Community Planning	LAT	Latin	SPA	Spanish
CSV	Community Service	LAS	Latin American Studies	STA	Statistics
CLS	Comparative Literature Studies	LET	Letters	TMD	Textiles, Fashion Merchandising,
CSC	Computer Science	LSC	Library and Information Studies		and Design
CNS	Consumer Studies	LIN	Linguistics	THE	Theatre
DHY	Dental Hygiene	MGT	Management	URI	University of Rhode Island Freshman
ECN	Economics	MSI	Management Science and Information		Seminar
EDC	Education		Systems	UYA	University Year for Action Internship
EDP	Ph.D. in Education	MAF	Marine Affairs		Program
ELE	Electrical Engineering	MRD	Marine Resource Development	URB	Urban Affairs
EGR	Engineering	MKT	Marketing	WMS	Women's Studies
ENG	English	MTH	Mathematics	WRT	Writing
ELS	English Language Studies	MCE	Mechanical Engineering and Applied	ZOO	Zoology
ENT	Entomology		Mechanics		

619 Current Accounting Theory (II, 3) Critical examination of accounting theory and practice with respect to cost and managerial accounting. (Lec. 3) Pre: 321. Staff

631 International Accounting (II, 3) Covers interpretation of international financial statements, focusing on foreign currency exchange, comparative accounting principles and disclosures, and audit reports. Uses actual financial statements in case analyses. (Lec. 3) Pre: 610 or permission of instructor. Staff

641 Federal Taxation Seminar (II, 3) Examination and discussion of the laws and rationale affecting the federal taxation of individuals as well as an introduction to research in taxation. (Lec. 3) Pre: 311 and graduate standing in accounting. Staff

643 Federal Taxes and Business Decisions (II, 3) The course focuses on tax law and its effect on business decisions. Cases are employed and primary emphasis is on income tax planning, although estate and gift taxes are explored. (Lec. 3) Pre: 610. Staff

644 Partnership, Estate, and Gift Taxation (II, 3) Examination of the tax laws affecting partnerships, estates, and gifts. Includes income and wealth taxation with an emphasis on tax avoidance through effective planning. (Lec. 3) Pre: 641. Matoney

645 Advanced Topics in Federal Taxation (II, 3) Examination of tax laws governing sales and exchanges, accounting methods, accounting changes, deferred compensation, tax shelters, and recent developments in the tax laws. (Lec. 3) Pre: 443 or 641. Matoney

646 Seminar in Tax Research, Policy, and Planning (1, 3) Examination of the methodology of tax research, the principles and procedures involved in tax planning, and the procedures involved in dealing with the IRS. (Sem. 3) Pre: 641 or equivalent. Matoney

661 Seminar in Auditing (1, 3) Readings and discussions on auditing standards, procedures, programs, working papers, internal control, and current auditing topics. (Sem. 3) Pre: 311 and graduate standing in accounting. Staff

681 Accounting Policy (II, 3) Development of accounting policy with respect to managerial planning and control. Emphasis on analytical evaluation of cases with major research project. (Lec. 3) Pre: 618, graduate standing, and completion of all foundation courses. Staff

691, 692 Directed Study in Accounting (I and II, 1-3 each) Advanced work under the supervision of a staff member and arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. Staff

693 Internship in Accounting (I and II, 3) Participation in management and/or problem solving under the supervision and guidance of a sponsoring agency with evaluation by the College of Business Administration. (Practicum) Pre: proposal acceptance by the College of Business Administration, no previous internship credit, graduate standing. S/U credit. Staff

Adult and Extension Education (ADE)

Program Director: Professor McCreight

491, 492 Special Problems in Adult Education (I and II, 1-3 each) Specialized problems in adult and extension education. Seminars or supervised individual projects. (Independent Study) Pre: permission of instructor. Staff

African and Afro-American Studies (AAF)

Director: Associate Professor Hamilton

150 Introduction to Afro-American History See History 150.

201 Introduction to the Black Experience (1, 3) Interdisciplinary exploration of some of the pivotal themes and issues in the study of peoples of African descent. (Lec. 3) Staff

202 Introduction to Afro-American Culture (II, 3) Interdisciplinary survey of the social origins of Afro-American culture. (Lec. 3) Gititi

247 Introduction to Pan-African Literature See English 247.

248 Afro-American Literature from 1900 to Present

See English 248.

250 (or APG 250) Africanity (I and II, 3) Multidisciplinary survey that seeks to analyze the factors of unity and diversity of African culture through the examination of language, art, music, belief systems, world views, and social organizations within various African civilizations. (Seminar) Pollnac and Staff (F)

300 Special Topics in African and Afro-American Studies (1 or 11, 3) Selected contemporary topics, problems, issues, and individuals from the field of African and Afro-American studies.

The topical format allows in-depth analysis of some significant aspect of the African and Afro-American experience. (Lec. 3) Pre: 201 or 202 or permission of instructor. May be repeated with different topic. Staff

360 (or ENG 360) Africana Folk Life (1, 3) Examination of the process of creativity, context, and form in the oral literary tradition of peoples of African descent throughout the world. (Lec. 3) In alternate years. Next offered fall 1995. Staff

362 Afro-American Poetry and Drama See English 362.

363 Afro-American Fiction See English 363.

364 The African Novel See English 364.

388 History of Sub-Saharan Africa See History 388.

390 Directed Study or Research (I and II, 3) Directed study arranged to meet the needs of individual students who desire independent work and to promote collective research efforts in African and Afro-American Studies. (Independent Study) Pre: permission of director. Staff

410 (or PSC 410) Issues in African Development (I or II, 3) A seminar focusing on the dynamics of African development, including political and social change, economic development, education, urbanization, rural development, environmental management, labor and business, industrialization, and technology transfer. (Seminar) Pre: APG 313 or PSC 201 or HIS 388 or permission of instructor. Staff

466 Urban Problems See Political Science 466.

474 Topics in Pan-African Literature See English 474.

Animal and Veterinary Science (AVS)

Chairperson: Professor Nippo (Fisheries, Animal and Veterinary Science)

101 Introduction to Animal Science (I, 3) Animal industry's role in world and national economy; inheritance, growth, physiology, nutrition, and diseases of domestic animals and poultry; geographic distribution and marketing of animal products. (Lec. 3) Nippo (N)

102 Introduction to Animal Science Laboratory (1, 1) Laboratory and demonstrations of principles of the animal industries. (Lab. 2) Pre: credit or concurrent enrollment in 101. Staff

- 104 Animal Management Techniques (II, 2) Lecture and laboratory in the handling skills needed to maintain animal comfort and productivity. (Lec. 1, Lab. 2) Pre: 101 and 102. Gross
- 110 Freshman Seminar in Animal and Veterinary Science (II, 1) Overview of the animal and veterinary sciences and the fields they encompass. Student projects, presentations, and field trips. (Seminar) Pre: 101. Open only to freshmen. Nippo or Mallilo
- 201 Companion Animal Management (II, 3) Nutrition, reproduction, behavior, and management of companion animals. (Lec. 3) Pre: 101. Nippo
- 212 Feeds and Feeding (I, 3) Principles and practices of feeding farm animals, nutrient requirements, physiology of digestion, identification and comparative value of feeds, computer calculation of rations for livestock. (Lec. 2, Lab. 2) Mallilo
- 301, 302 Seminar in Animal and Veterinary Science (I and II, 1 each) Readings, reports, lectures, and discussions on scientific topics in animal and veterinary science. Subject matter adapted to student and faculty interest. (Seminar) Pre: junior or senior standing. Nippo
- 323 Animal Management I (II, 3) Principles of care and management of domesticated ruminant animals including dairy cattle, beef cattle, sheep, and goats. Emphasis on the production methods of the animal industries. Participation in field trips required. (Lec. 3) Mallilo, McCreight, and Gross
- 324 Animal Management II (II, 3) Principles of the care and management of domesticated monogastric animals including swine, horses, and poultry. Emphasis will be given to modern production methods. Participation in field trips reguired. (Lec. 3) Rhodes, Gross, and Nippo
- 331 Anatomy and Physiology (1, 3) Fundamentals of anatomy and physiology of domesticated animals. (Lec. 3) Pre: ZOO 111 and junior standing. Rhodes
- 332 Animal Diseases (II, 3) Specific diseases of avian and mammalian species; etiology, symptoms, and control. (Lec. 3) Pre: 331. Whitworth
- 333 Anatomy and Physiology Laboratory (1, 1) The fundamental anatomy of domestic animals is examined. Demonstrations of physiological principles are performed. Laboratory techniques for screening physiological function in vivo and in vitro are covered. (Lab. 2) Pre: credit or concurrent enrollment in 331. Rhodes

- 343 Behavior of Domestic Animals (II, 3) Examination of the basis for, and exhibition and control of, behavioral patterns of domestic animals. (Lec. 3) Pre: 101. Nippo
- 365 Laboratory Animal Technology (1, 3) Management of laboratory animals with emphasis on animal biology, breeding, care, health, research use, and animal welfare. (Lec. 2, Lab. 2) Pre: ZOO 111 or BIO 102. Whitworth
- 372 Introductory Endocrinology (1, 3) Morphology and physiology of endocrine glands. Roles of hormones in regulation of body processes. Discussion of all endocrine organs and relationship of endocrine and nervous systems. Emphasis on domesticated animals and fowl. (Lec. 3) Pre: BIO 102 or ZOO 111, Rhodes
- 399 Animal Science Internship (I and II, 1-6) Options in various professional experience programs involving the animal and veterinary sciences. (Practicum) Pre: permission of chairperson. May be repeated for a maximum of 6 credits. S/U credit. Staff
- 412 Animal Nutrition (1, 3) Principles of animal nutrition, metabolism of carbohydrates, proteins, and fats; mineral and vitamin requirements; nutritive requirements for maintenance, growth, reproduction, lactation, and work. (Lec. 3) Pre: 212, organic chemistry, and junior standing. Nippo
- 420 Animal Breeding and Genetics (II, 3) Scientific methods for the genetic improvement of domesticated animals. Genetic variation and expected results of different types of selection and mating systems. (Lec. 3) Pre: 352 or equivalent. In alternate years. Next offered 1995-96. Gross
- 462 Laboratory Animal Techniques (II, 3) Laboratory animal applications in clinical studies; research in nutrition, endocrinology, and other selected topics. (Lec. 1, Lab. 4) Pre: 365. Whitworth
- 463 Animal Veterinary Technology (II, 3) Theory and application of animal health practices required of paraprofessionals in a veterinary practice. The role of the veterinary assistant in a modern clinical practice will be emphasized. (Lec. 2, Lab. 3) Pre: 331. Staff
- 472 Physiology of Reproduction (II, 3) Anatomy and physiology of reproduction, with emphasis on domestic animals. Current experimentation in endocrinology of reproduction is surveyed. (Lec. 2, Lab. 2) Pre: ZOO 111. Rhodes

- 491, 492 Special Projects (I and II, 1-3 each) Work that meets the individual needs of students in animal and veterinary science. (Independent Study) Staff
- 591, 592 Research Problems (I and II, 3 each) Research problems to meet individual needs of graduate and honors students in the fields of animal breeding, nutrition, or physiology and food science. (Independent Study) Pre: permission of chairperson. Staff
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Anthropology (APG)

Chairperson: Professor Poggie (Sociology and Anthropology)

200 (or LIN 200) Language and Culture (I or II, 3) Cross-cultural survey of the interaction of culture and language. Introduction to various fields of linguistic research emphasizing descriptive and semantic investigations. Linguistic studies used as illustrative material. (Lec. 3) Pollnac (S)

- 201 Human Origins (I and II, 3) The biocultural evolution of humans; review of the fossil record. (Lec. 3) Loy and LaVelle (N)
- 202 The Prehistoric Ages (I and II, 3) Archaeological perspectives on human biological and cultural development from the Old Stone Age to the Iron Age. Emphasizes prehistoric lifeways, emergence of food production, earliest Old and New World civilizations, (Lec. 3) Turnbaugh (S)
- 203 Cultural Anthropology (I and II, 3) Anthropological approaches to the study of peoples and cultures around the world. (Lec. 3) Staff (S)
- 220 Introduction to the Study of Language See Linguistics 220.

250 Africanity See African and Afro-American Studies 250.

- 300 Human Fossil Record (1, 3) Investigation into the biocultural evolution of hominids over the last 15 million years; course based on evidence from fossil bones, teeth, and paleoecological reconstruction. (Lec. 3) Pre: 201 or 202 or permission of instructor. LaVelle
- 302 Methods of Anthropological Inquiry (I or II, 3) Logic, techniques, and problems in obtaining true information in anthropological inquiry. Problems from anthropological field

- work and use of cross-cultural data. (Lec. 3) Pre: 203 or permission of instructor. In alternate years. Next offered 1995-96. Poggie
- 303 New World Prehistory (I or II, 3) Reconstruction of American Indian cultural history from earliest times to the period of European discovery and colonization, using archaeological evidence and perspectives. (Lec. 3) Turnbaugh (F)
- 309 Anthropology of Religion (1 or II, 3) Religious systems of selected peoples around the world; examination of theories concerning the origins, functions, and natures of these religions. (Lec. 3) Staff
- 310 Topics in Anthropology (I and II, 1-3) Analytical study of selected topics in anthropology. Subjects will vary according to the expertise and availability of instructors. (Lec. 1-3) Pre: one anthropology course or permission of instructor. May be repeated with different topic. Staff
- 311 Native North Americans (I or II, 3) Survey of selected North American Indian groups from before European contact to the present, Modern reservation life; influence of the federal government on Indian life. (Lec. 3) Lynch (F)
- 313 Peoples of Africa (1 or II, 3) Studies of Africa's peoples and cultures from prehistoric times to the present. (Lec. 3) Pollnac (F)
- 315 Cultures and Societies of Latin America (I or II, 3) Contemporary cultures and societies; emphasis on adjustment of the people to modern social and economic changes. (Lec. 3) Pre: 203 or permission of instructor. Poggie (F)
- 317 Archaeological Method and Theory (I or II, 3) Problems of collection and interpretation of data, emphasizing nature of archaeological investigation, classification, dating, reconstruction of social contexts. Laboratory demonstrations. (Lec. 3) In alternate years. Next offered 1996-97. Turnbaugh
- 319 Cultural Behavior and Environment (I or II, 3) Cultural adaptations made by traditional and industrial societies to natural and human environments using examples from prehistory and ethnography. (Lec. 3) in alternate years. Next offered 1995-96. Turnbaugh (S)
- 320 Sociolinguistics See Linguistics 320.
- 322 Anthropology of Modernization (I or II, 3) Patterns and processes of contemporary social and cultural change among traditional people. (Lec. 3) Pre: 203 or permission of instructor. Poggie

- 325 The Irish (1, 3) An examination of the beliefs, customs, and social institutions which comprise Irish life, at home and abroad. (Lec. 3) Lynch (F)
- 326 Anthropology of Law (I or II, 3) Examination of the range of procedures for handling disputes in selected societies around the world. Emphasis on relation of law to its cultural context. (Lec. 3) Lynch
- 327 History of Physical Anthropology (1 or II, 3) An examination of some classic works in human evolution and physical anthropology. Designed to provide an understanding of the philosophical and historical development of biological anthropology. (Lec. 3) Loy (L)
- 350 Human Variation (I or II, 3) Anthropological investigation into the nature and causes of human biological diversity with emphasis on living populations. Students enrolled in this course will serve as a sample for measuring human variation. (Lec. 3) Pre: any 200-level anthropology course or permission of instructor. LaVelle
- 400 Evolution, Culture, and Human Disease (II, 3) Investigation of the dynamic interrelationships between culture, human disease, and evolution. Encompasses study of living peoples as well as our fossil and prehistoric ancestors, and includes infectious and chronic diseases. (Lec. 3) Pre: introductory physical anthropology, biology, or zoology, or permission of instructor. Staff
- 401 History of Anthropological Theory (I or II, 3) Theory from the sixteenth century to the present; readings from Tylor, Morgan, Boas, Sapir, Kroeber, Benedict, Malinowski, and Radcliffe-Brown. (Seminar) Pre: 203 or permission of instructor. Poggie
- 405 (or PSY 405) Psychological Anthropology (I or II, 3) Study of human behavior in different cultures employing psychological concepts and theories. (Lec. 3) Pre: 203 or permission of instructor. Pollnac
- 412 Primate Behavior and Organization (I or II, 3) Investigation of the naturalistic behavior and organization of nonhuman primates, and the relationship of primate data to anthropology. (Lec. 3) Pre: 201 or permission of instructor. Loy
- 413 (or MAF 413) Peoples of the Sea (1, 3) Examination of human sociocultural adaptation to the seas. (Lec. 3) Pre: 203 or permission of instructor. Pollnac and Poggie

470 Problems in Anthropology (I and II, 3) Staff-guided study and research, seminar, or individual program. (Independent Study) Pre: permission of chairperson. Staff

Applied Mathematical Sciences (AMS)

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Applied Pharmaceutical Sciences (APS)

Chairperson: Professor Needham

- 327 (PHC) Biopharmaceutics (1, 2) Physicochemical properties of dosage forms as they control drug release; dissolution kinetics. (Lec. 2) Pre: third-year standing. Rhodes
- 328 (PHC) Pharmacokinetics (II, 3) Application of pharmacokinetic principles to the disposition of drugs in the body. Development of drug dosage regimen in disease states. (Lec. 3) Pre: 327 or equivalent. Rosenbaum
- 340 (PHC) Physical Pharmacy (I and II, 3) Physicochemical properties of pharmaceutical systems. (Lec. 3) Pre: third-year standing. Zia
- 349 (PHP) Pharmacy Administration Principles (1, 3) Practical solutions to problems encountered in selection, location, and management of pharmacies, their personnel, stock, and equipment. (Lec. 3) Taubman
- 350 (PHC) Pharmaceutical Technology (I and II, 3) Preparation and evaluation of drug delivery systems. (Lec. 3) Pre: third-year standing. Kislalioglu
- 351 (PHP) Pharmaceutical Law and Ethics (II, 3) Basic principles of law and ethics as applied to federal, state, and local acts, regulation, and practices encountered in professional practice. Specific attention to liabilities of pharmacists in decisions; actions involving sale of medicinals, poisons, narcotics. (Lec. 2, Rec. 1) Campbell
- 352 (PHC 351) Personal Cosmetics (II, 3) Formulation and manufacture of various types of personal cosmetics and toilet preparations. Examples of types studied are prepared in laboratory. (Lec. 2, Lab. 3) Pre: 344. Lausier
- 360 (PHC) Pharmaceutical Technology Laboratory (I and II, 1) Formulation, compounding, and evaluation of drug delivery systems. (Lab. 4) Pre: third-year standing. Zia

- 406 (PHP) Pharmacy Retailing (II, 3) Effect of economic trends and marketing changes on the retail distribution of pharmaceuticals and allied products, particularly as they affect the professional practice of pharmacy. (Lec. 3) Pre: permission of chairperson. In alternate years. Campbell and Taubman
- 448 (PHP) Third-Party Prescription Programs (II, 2) Methods of evaluating third-party prescription programs in relationship to the healthcare system, including the relationship of public and private for-profit and nonprofit programs. Evaluation of delivery of pharmaceutical services as applied to patient and drug eligibility, reimbursement, and claims processing. (Lec. 2) Pre: 349 and 351. Not for graduate credit. Taubman and Campbell
- 453 (PHP) Drug Marketing Principles (II, 2) Modern methods of merchandising, agencies involved in marketing drug products; their functions, particularly as they affect the community pharmacy phase of professional practice. (Lec. 2) Pre: fifth-year standing, ECN 201, or permission of chairperson. Taubman and Campbell
- 459 (PHP) Public Health (1, 3) Principles of prevention and control of disease and application of this information to current health problems. (Lec. 3) Pre: MIC 201 and PCG 446. Staff
- 461 (PHC) Health-Related Supplies (1 or 11, 1) Practical training in fitting health supports and using medical devices. (Lab. 2) Pre: 340, 350, 360, fourth-year standing. May be taken concurrently with 462. Not for graduate credit. Staff
- 462 (PHC) Nonprescription Drugs (1 or 11, 3) Study and evaluation of nonprescription drugs. (Lec. 3) Pre: 340, 350, 360, fourth-year standing. May be taken concurrently with 461. Not for graduate credit. Staff
- 480 (PHP) Prepaid Drug Plans (1, 3) Institutional relationships involved in the prescribing, dispensing, and prepayment of drugs. Problems of interference with pharmaceutical or medical practice arising from different types of prepayment plans. Actual experience, laws, and court decisions, abuse and controls. (Lec. 3) Pre: 349 and 453, or equivalent. Taubman
- 497, 498 (PHC) Special Problems (I and II, 1-3 each) Method of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Independent Study) Pre: permission of chairperson. Staff
- 530 (PHC) Fundamentals of Cosmetic Science (1, 3) Study of the fundamentals of the function and behavior of skin, hair, and nails and their reactivity to cosmetic raw materials. Properties

- of cosmetic ingredients will also be addressed. (Lec. 3) Pre: permission of instructor. Kislalioglu and Staff
- 531 (PHC) Basic Research in Cosmetic Science (1, 2) Laboratory exercises in the form of individual projects designed to provide an understanding of the basic properties and behavior of skin, hair, and nails. Assessment of cosmetic product performance and the basic properties of cosmetic ingredients. (Lab.) Pre: permission of instructor. Kislalioglu and Staff
- 532 (PHC) Cosmetic Product Formulation (II, 2) Provides a basic understanding of cosmetic products, technology, and quality control; improves formulation skills with a particular emphasis on the application of new technological developments in cosmetic preparation. (Lab. 2) Pre: permission of instructor. Kislalioglu and Staff
- 533 (PHP 530) Behavioral Skills in Pharmacy (SS, 3) Communication skills, behavioral aspects of illness, and the social and ethical considerations of clinical pharmacy. (Lec. 3) Pre: graduate standing or permission of instructor. Staff
- 535 (PHC) Pharmacokinetics (II, 3) The principles and application of clinical pharmacokinetics for advanced pharmacy students. Developing, modifying, and evaluating dosage regimens. (Lec. 3) Rosenbaum
- 540 (PHP) Principles, Methods, and Applications of Epidemiology (1, 3) An introduction to epidemiology, the study of health and disease in populations. Epidemiologic methods and research design for conducting and interpreting health research. (Lec. 3) Pre: STA 307 or permission of instructor. Willey Lessne
- 570 (PHP) Case Studies in Pharmacy Law (II, 3) Case studies and a detailed analysis of the FDC, Controlled Substances Act, and health insurance laws. (Lec. 3) Pre: 351, In alternate years. Campbell
- 599 (PHC; PHP) Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 621 (PHC) Manufacturing Pharmacy I (I or II, 2) Theory and practice in the manufacture of pharmaceuticals and the principles of operation of the equipment used for their production. (Lec. 2) In alternate years. Rhodes
- 622 (PHC) Manufacturing Pharmacy II (I or II, 3) Theories applied to the manufacture of pharmaceuticals with an emphasis on formulation considerations and principles of operation of

- equipment used for their production, (Lec. 3) Pre: 621. In alternate years. Needham
- 623 (PHC) Manufacturing Pharmacy Laboratory (1 or 11, 2) Practical application of the principles of all aspects of dose-form manufacture, including an emphasis on good manufacturing procedures. (Lab.) Pre: credit or concurrent enrollment in 622. Needham
- 631 (PHC) Advanced Physical Pharmacy (I or II, 4) Theory and application of physical chemical principles to problems in pharmaceutical research, with emphasis on methods by which properties of new medicinal agents are determined. (Lec. 4) Pre: permission of instructor. Zia and Staff
- 633 (PHC) Advanced Physical Pharmacy Laboratory (II, 1) Laboratory exercises dealing with the physical-chemical principles used in the evaluation of pharmaceutical substances. (Lab. 4) Pre: CHM 435. Zia and Staff
- 651, 652 (PHP) Health Care Systems I, II (I and II, 3 each) Arrangements for utilizing pharmaceutical resources in public and private systems of health care in the United States and other countries. Variations in quality and distribution of care among socioeconomic groups. (Lec. 3) Pre: 480 and STA 308 or 409, or equivalent. Taubman and Campbell
- 660 (PHC 680) Industrial Project (Pharmaceutics) (I, II, or SS, 3) A research project directed by the major professor on a topic in industrial pharmacy. A report must be submitted to the department faculty. The project will normally be conducted off campus. (Lab.) Pre: graduate standing in pharmaceutics. Staff
- 670 (PHC) Advanced Pharmacokinetics (1, 2) Application of classical compartmental and noncompartmental analyses to drug absorption and disposition in linear and nonlinear systems. (Lec. 2) Pre: 535 or permission of instructor. Rosenbaum and Staff
- 680 (PHP) The Legal Environment in Health Administration (1, 3) Application of specialized statutory and regulatory provisions in federal and state law to the delivery of health care. (Lec. 3) Pre: graduate standing. Campbell
- 693, 694 (PHC 521, 522; PHP 621, 622) Seminar (I and II, 1 each) Seminar discussions including presentation of papers on selected topics in pharmacy. (Seminar) Required of all graduate students, with a maximum of 1 credit allowed per year. May be repeated for a maximum of 2 credits for M.S. candidates. May be repeated for a maximum of 5 credits for Ph.D. candidates. Rhodes

697, 698 Research in Applied Pharmaceutical Sciences (I and II, 1-3 each) Literature survey, laboratory work, and a detailed research report on one or more assigned topics in pharmacy. (Independent Study) Staff

699 (PHC) Doctoral Dissertation Research (/ and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Aquacultural Science and Pathology (ASP)

Chairperson: Professor Nippo (Fisheries, Animal and Veterinary Science)

281 Introduction to Aquaculture (1, 3) Aquaculture, its contribution to world food supply, methods of production, environmental and ecological considerations, cultural practices employed for selected species, selective breeding, feeding, disease, processing, and marketing. (Lec. 3) Pre: BIO 102 or ZOO 111. Rice

282 Introductory Aquaculture Simulation Laboratory (1, 1) Modeling aquaculture of various fish species in tank and pond systems using computer simulation software. Exploration of the effects of stocking density, feeding rate, oxygenation levels, disease, and other factors on the profitability of fish farms. (Lab. 3) Pre: concurrent enrollment in 281. Rice

352 General Genetics See Plant Sciences 352.

355 Genetics Laboratory See Plant Sciences 355.

381 Shellfish Aquaculture (II, 3) Worldwide culture of marine and freshwater crustaceans and mollusks. Emphasis on life history, biological requirements, cultural practices, and economic importance of major species used for human food. (Lec. 3) Pre: 281 and one semester of general chemistry. Rice

400 Diseases of Cultured Fishes (II, 3) Nature, causes, diagnosis, and spread of diseases limiting piscine freshwater and marine aquaculture projects. Emphasis on prevention, control, and treatment of more common diseases affecting hatchery management, (Lec. 3) Pre: 281; ZOO 201 or AVS 331. Wolke

401 Pathobiology (1, 3) Mechanisms and causes of disease in homeothermic and poikilothermic vertebrates. Cell death, inflammation, infection, metabolic disorders, and neoplasis in relation to fish, reptiles, birds, and mammals.

Effects of disease at the cellular, tissue, organ, and organismal levels with a medical orientation. (Lec. 3) Pre: ZOO 201 or AVS 331. Wolke

476 The Genetics of Fish (1, 3) Modes of inheritance found in fish including chromosome number, polyploidy, sex determination, and hybridization. Heritabilities, methods of selection, and mating systems used in the development of fish suited for intensive culture. (Lec. 3) Pre: 352.

481 Shellfish Aquaculture Laboratory (1, 2) Detailed study of hatchery, nursery, and growout techniques for the production of bivalve mollusks. Culture of phytoplankton, conditioning of broodstock, spawning, larviculture, settlement, metamorphosis, nursery and grow-out methods. (Lab. 6) Pre: 381 or permission of instructor. Offered fall of odd-numbered years. Rice

483 Salmonid Aquaculture (1, 3) Principles of salmonid aquaculture, including culturing, spawning, incubation, feed formulation and feeding, disease control, genetics, systems management, harvesting, and transport. (Lec. 2, Lab. 2) Pre: 281 or equivalent. Bradley

486 Applied Physiology of Fish (II, 3) Functions of the organ systems of fish, regulation of physiological functions and environmental interactions. Emphasis on the teleosts. (Lec. 3) Pre: ZOO 341 or 345 or equivalent. Bradley

491, 492 Special Projects (*I and II, 1–3 each*) Work that meets the individual needs of students in aquaculture. (Independent Study) Staff

501, 502 Seminar (I and II, 1 each) Preparation and presentation of scientific papers on selected subjects in animal pathology and virology. . (Seminar) Wolke

532 Experimental Design See Statistics 532.

534 (or MIC 534) Animal Virology (1, 3) Basic properties, classification, and evolution of animal viruses. Individual agents are studied in detail. (Lec. 3) Pre: MIC 432, 533, or permission of chairperson. Staff

536 (or MIC 536) Virology Laboratory (1, 2) Methods employed in diagnosis and for the investigation of the biological, physical, and chemical properties of animal viruses. (Lab. 6) Pre: credit or concurrent enrollment in 534. Staff

538 (or MIC 538) Epidemiology of Viral and Rickettsial Diseases (II, 2) Principles of epidemiology. Interrelationships of host, environment, and agent in viral and rickettsial diseases. (Lec. 2) Pre: credit or concurrent enrollment in 534. In alternate years. Next offered 1995-96. Staff

555, 556 Pathology Rotation (I and II, 3 each) Applied anatomical and clinical pathology of aquatic animals including necropsy duty and/or clinical hematology, chemistry, microbiology, parasitology. Attendance at weekly histopathology seminar and research/case report required. (Lab. 6) Pre: one course in histology or ZOO 323, MIC 432, or permission of instructor. In alternate years. Next offered 1995-96. Wolke

581 Current Topics in Molluscan Aquaculture (1, 3) Review and critical analysis of recent literature within the field of molluscan biology with emphasis on application to mariculture techniques. Student presentation of selected topics and field trips to state-of-the-art mariculture facilities. (Lec. 3) Pre: graduate standing or senior standing with permission of instructor. Rice

584 Advanced Aquaculture Systems (II, 3) Development of design criteria, operational analysis, and management of selected species in water reuse systems. (Lec. 2, Lab. 2) In alternate years. Next offered 1995-96. Staff

586 Fish Nutrition (I, 3) Digestion and metabolism of carbohydrate, protein, and lipids by fish. Role of vitamins and minerals in metabolism and associative nutritional diseases resulting from deficiencies. Inadvertent toxic factors in fish feeds. (Lec. 3) Pre: 412 and CHM 228 or equivalent. In alternate years. Next offered 1995-

591, 592 Special Projects (I and II, 1-3 each) Research projects in animal pathology, virology, and aquaculture. (Independent Study) Pre: graduate standing or permission of chairperson. Staff

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Art (ART)

Chairperson: Professor Holmes

002 Sophomore Review (I and II, 0) Presentation by majors of a broad selection of their previous college-level work for review by faculty. (Studio) Pre: 101, 103, 207, and ARH 120. Staff

101 Two-Dimensional Studio I (I and II, 3) Exploration of principles of visual organization relating primarily to formulations on the twodimensional surface by means of fundamental

- studies and assignments in studio techniques. (Studio 6) Staff (A)
- 103 Three-Dimensional Studio I (I and II, 3) Introduction to problems in three-dimensional organization. Observations from objects with discussion and application to simple mold and casting techniques. Introduction to the use of basic materials, clay, plaster, and wood, (Studio 6) Rohm and Calabro (A)
- 203 Color (1 or II, 3) Visual perception of color and manipulation of light as they pertain to two- or three-dimensional formulations. (Studio 6) Next offered 1996-97. Staff (A)
- 207 Drawing I (I and II, 3) Visual perception and observation, using nature structures, drawing from live models, still life, and landscape; exercises in basic drawing techniques and principles. (Studio 6) Staff (A)
- 208 Drawing II (I and II, 3) Advanced practice in graphic conceptions; exercises in spatial problems, organizing relationships of abstract forms and structures; advanced drawing media. (Studio 6) Pre: 207. Staff
- 213 Photography I (I and II, 3) Introduction to photography, exploration of related techniques using light-sensitive materials. (Studio 6) May be repeated for a maximum of 6 credits. Parker
- 215 Filmmaking I (1 or II, 3) Introduction to basic filmmaking techniques and theory. Emphasis on film as a visual art. Required projects and readings. (Studio 6) May be repeated for a maximum of 6 credits with permission of instructor. May be taken once for General Education credit. Next offered 1997-98. Staff (A)
- 221 Two-Dimensional Studio II (I and II, 3) Techniques of painting, utilizing as reference the natural and manmade environments. Traditional and contemporary materials. (Studio 6) Pre: 101 and 207. Staff
- 231 Printmaking I (I and II, 3) Introduction to intaglio and lithographic processes, with an emphasis on image development and workshop procedures. (Studio 6) Pre: 101 or 207 or permission of instructor. Pagh (A)
- 233 Relief Printing and Typography I (I and II, 3) Introduction to basic elements of graphic design; letter forms, their relationship to the page and to the image. Various traditional and modern reproduction techniques, workshop practice in typesetting and layout. (Studio 6) Pre: 101 or permission of chairperson. Richman (A)
- 243 Three-Dimensional Studio II (I and II, 3) Formation of three-dimensional forms employ-

- ing basic sculptural materials and techniques. Basic media, emphasis on form, material, and structural means in studio practice. (Studio 6) Pre: 103 or permission of instructor, Rohm and
- 300 Art Gallery Internship (I and II, 3) Curatorial responsibilities taught through hands-on experience in exhibition programs including: exhibition research, production of interpretive texts and lectures, art object preparation, registration, and installation. (Practicum) Pre: ARH 251, 252 or permission of instructor. Staff
- 301, 302 Projects in Studio I, II (I and II, 3 each) Studio projects under guidance of instructor selected by student. The student may select another instructor for 302. (Independent Study) Pre: enrollment in Honors Colloquium and/or permission of chairperson and instructor. May be repeated with permission of instructor and chairperson. Staff
- 303 Topics in Studio (I or II, 3) Selected topics based on particular materials, techniques, or thematic premises. Topics and semesters to be announced. (Studio 6) Pre: art major status, or permission of instructor or chairperson. May be repeated for credit with permission of instructor and chairperson. Staff
- 304 Introduction to Computer Art (1 or 11, 3) Introduction to using the microcomputer to create final works or as an aid in producing works in traditional media. (Studio 6) Pre: iunior or senior standing in the art studio program. Staff
- 305 Photographic Alternatives (I or II, 3) Topics emphasize possibilities in photographic themes and techniques, including alternative processes, collotype, and studio practice. (Studio 6) Pre: 213 and permission of instructor. May be repeated with permission of instructor and chairperson. Staff
- 307 Art Studio Internship (I and II, 3 or 6) Work in an institution, agency, or organization supervised by an art professional and a studio faculty member. Activities, expectations, performance assessments, hours, and credits determined through prior consultation. (Practicum) Limit of 6 credits toward graduation. Pre: junior standing in the B.A. or B.F.A. studio program and permission of chairperson. Staff
- 309, 310 Drawing III, IV (I, 3 each) 309: Further problems, with emphasis on independent investigation in analysis, planning, and supportive notation. 310: Continuation of 309. (Studio 6) Pre: 208 or permission of instructor for 309; 309 for 310, 310 may be repeated for credit with permission of instructor. Klenk

- 314 Photography II (I and II, 3) Continuation of 213. (Studio 6) Pre: 213. May be repeated for credit with permission of instructor. Parker
- 316 Filmmaking II (I and II, 3) Continuation of 215 with added emphasis on sound. Required projects and reading. (Studio 6) Pre: 215. May be repeated for credit with permission of instructor. Staff
- 322 Two-Dimensional Studio III (I and II, 3) Continuation of 221. (Studio 6) Pre: 221. May be repeated for credit with permission of instructor. Klenk
- 332 Printmaking II (I and II, 3) Continuation of 231 with introduction to color lithography. Contemporary viewpoints and their relationship to traditional printmaking, with emphasis on individual image development. (Studio 6) Pre: 231. Pagh
- 334 Relief Printing and Typography II (I and II, 3) Continuation of 233. Applications of previous studies to experimental workshop assignments leading to production of book pages, folders, posters, and other visual material incorporating type and print in a contemporary idiom. (Studio 6) Pre: 233 or permission of chairperson. May be repeated for credit with permission of instructor. Richman
- 337 Printmaking III (I and II, 3) Semi-independent work in printmaking media. Introduction of aluminum plate and photo-lithography. (Studio 6) Pre: 332. Pagh
- 338 Printmaking IV (I and II, 3) Emphasis on individual development in specific printmaking media. Critical evaluation of visual development. (Studio 6) Pre: 337. May be repeated for a maximum of 6 credits with permission of instructor. Pagh
- 344 Three-Dimensional Studio III (I and II, 3) Continuation of 243. (Studio 6) Pre: 243 or permission of instructor. May be repeated for a maximum of 6 credits with permission of instructor. Rohm and Calabro
- 405, 406 Studio Seminar (I and II, 3 each) Intensive self-directed work under guidance of instructors. Periodic critiques and discussions of work of all participants. (Studio 6) Pre: 002 and senior standing; 405 for 406. Staff
- 501 Graduate Studio Seminar (I or II, 3) Intensive independent studio work under guidance of instructors. Periodic critiques and discussions related to work of all participants in the course. (Studio 6) Pre: 48 credits in studio. Staff

Art History (ARH)

Chairperson: Professor Holmes (Art)

- 120 Introduction to Art (I and II, 3) Fundamental principles of the visual arts, evolution of styles and conceptions through the ages in different forms of creative expression. (Lec. 3) Holmes (A)
- 184 Architecture: An Introduction (I and II, 3) An introduction to the theory and history of architecture, considering aesthetic issues, social function, and the impact of technological change. Material will be presented in slide lectures and field visits to architectural sites. (Lec. 3) Onorato
- 251 Introduction to History of Art (I and II, 3) The development of architecture, sculpture, and painting from prehistory through the Middle Ages. (Lec. 3) Staff (A)
- 252 Introduction to History of Art (I and II, 3) The development of architecture, sculpture, and painting from the early Renaissance to the present. (Lec. 3) Staff (A)
- 284 Introductory Topics in Architectural History (I or II, 3) Consideration of the history of architecture and city planning through surveys of selected periods and themes. (Lec. 3) May be repeated for a maximum of 6 credits with permission of instructor. May be taken once for General Education credit. Onorato (A)
- 285 Women in Art (1 or 11, 3) Survey of images of women throughout the history of art in Europe and America; investigation of the roles of women as patrons and artists in art-history. (Lec. 3) Staff (A)
- 300 Art History Internship (I and II, 1-6) Internship in an approved professional organization (such as museum, gallery, preservation society, auction house). Specific details determined in consultation with faculty supervisor and off-campus liaison, and approved by chairperson. (Practicum) May be repeated for a maximum of 6 credits. S/U only. Staff
- 354 The Art of Greece and Rome (1, 3) Developments in architecture, painting, and sculpture in Greece and Rome from 800 B.C. to 400 A.D. Brief analysis of the art of the Aegean from 2500 to 1500 B.C. (Lec. 3) Pre: 251 or permission of chairperson. Hollinshead (F)
- 356 Medieval Art (II, 3) Painting, sculpture, architecture, and minor arts of the Middle Ages from 500 to 1400 in Western Europe. (Lec. 3) Pre: 251 or permission of chairperson. Hollinshead (F)

- 359 Baroque Art (II, 3) Developments in painting, sculpture, and architecture in Italy and northern Europe from 1600 to 1750. (Lec. 3) Pre: 251 or 252 or permission of instructor. Roworth (A) (F)
- 363 Modern Art: Nineteenth and Twentieth Centuries (I or II, 3) A survey of trends in the visual arts over the last two centuries with emphasis on defining a "modern" aesthetic. Painting, sculpture, performance, conceptual, and related arts will be discussed. (Lec. 3) Pre: 251 or 252 or permission of instructor. Onorato (F)
- 364 American Art (I or II, 3) Painting, sculpture, and architecture from their origins in the seventeenth century to the present; emphasis on the nineteenth century. (Lec. 3) Pre: 251 or 252. Onorato (A)
- 365 Renaissance Art (1, 3) Painting, sculpture, and architecture of Italy and northern Europe from 1400 to 1600. (Lec. 3) Pre: 251 or 252 or permission of instructor. Roworth (F)
- 371, 372 Projects in Art History I, II (I and II, 3 each) Directed study in art history under guidance of instructor selected by student. The student may select another instructor for 372. (Independent Study) Pre: enrollment in Honors Colloquium and/or permission of chairperson and instructor; 371 for 372. Staff
- 374 Topics in Film (1 or 11, 3) Explores the social, historical, and aesthetic development of the cinema from 1895 to the present. Lectures (3 hours) and required film screenings. (Lec. 3) May be repeated for a maximum of 6 credits with permission of instructor. Next offered 1997-98. Staff (A)
- 375 Topics in the History of Photography (I or II, 3) Explores the social, historical, and aesthetic development of photography from 1826 to the present. (Lec. 3) May be repeated for a maximum of 6 credits with permission of instructor. Staff
- 461 Topics in Methods, Theory, and Criticism (I or II. 3) Art history methods or selected topics in the theory and criticism of art. (Lec. 3) Pre: permission of chairperson. May be repeated for credit with permission of instructor, Fall 1995: The Idea of the Avant-Garde. Holmes
- 462 Contemporary Art Seminar: Art Since 1945 (II, 3) Analysis of contemporary work and its relation to earlier movements. (Seminar) Pre: 363. May be repeated for a maximum of 6 credits with permission of instructor. Onorato
- 469, 470 Art History: Senior Projects (I and II, 3-6 each) Intensive, independent work on a project determined after consultation with the

student's project advisor. (469, Independent Study; 470, Tutorial) Pre: permission of chairperson. Staff

480 Advanced Topics in European and American Art (1 or 11, 3) Consideration of the history of European and American art through analysis of selected periods or themes. (Seminar) Pre: permission of instructor. Spring 1996: Objects and Documents of Humanities Research. Onorato

Astronomy (AST)

Chairperson: Professor Malik (Physics)

108 Introductory Astronomy (I and II, 3) Celestial sphere, earth as an astronomical body, sun, motions and characteristics of members of solar system, constellations, constitution of stars and nebulae. Planetarium used freely for lectures and demonstration. (Lec. 3) Staff (N)

334 Optics See Physics 334.

483, 484 Laboratory and Research Problems in Physics See Physics 483, 484.

491, 492 Special Problems See Physics 491, 492.

Bachelor of General Studies (BGS)

Coordinator: Professor Grubman-Black

- 100 Pro-Seminar (I or II, 4) Introduction to critical approaches to learning with emphasis on reading and rhetorical skills appropriate to college students. (Lec. 4) Required of BGS students. S/U credit. Staff (Cw)
- 390 Social Science Seminar (1 or II, 6) Exploration of the social sciences for BGS students who have completed the Pro-Seminar, started their major, and have the consent of their advisor. (Seminar) Required of BGS students. Staff (S)
- 391 Natural Science Seminar (I or II, 6) Exploration of the natural sciences for BGS students who have completed the Pro-Seminar, started their major, and have the consent of their advisor. (Seminar) Required of BGS students. Staff (N)
- 392 Humanities Seminar (I or II, 6) Exploration of the humanities for BGS students who have completed their Pro-Seminar, started their major, and have the consent of their advisor. (Seminar) Required of BGS students. Staff (L)
- 397 Human Studies Major Seminar (1 or 11, 3) Capstone course of human studies major. Re-

view and assessment of students' major education through intensive exploration of issues central to human studies. (Seminar) Pre: completion of 30 credits of major. Required of BGS human studies majors. Staff

398 Applied Communication Major Seminar (I and II, 3) Capstone course of applied communications major. Review and assessment of students' major education through intensive exploration of issues central to professional communications. (Seminar) Pre: completion of 30 credits of major courses. Required of all applied communication majors. Staff

399 Supervised Senior Project (I and II, 3) A project chosen by the student with faculty quidance on a topic relevant to the student's major, resulting in a paper or other demonstration of academic achievement. (Independent Study) Pre: senior standing in BGS program and approval of advisor and BGS coordinator. Required of BGS students. Staff

Biochemistry (BCH)

Chairperson: Professor Laux (Biochemistry, Microbiology, and Molecular Genetics)

282 The Nature of Biochemistry (II, 3) A few topics will be selected for historical development on the basis of their significance in the emergence of biochemistry as a scientific discipline, their importance in revealing fundamental principles of biochemistry, and their continual prominence in contemporary research. (This is not a survey course in biochemistry.) Pre: CHM 124 or 227. Tremblay

311 Introductory Biochemistry (I and II, 3) Chemistry of biological transformations in the cell. Chemistry of carbohydrates, fats, proteins, nucleic acids, enzymes, vitamins, and hormones integrated into a general discussion of the energy-yielding and biosynthetic reactions in the cell. (Lec. 3) Pre: CHM 124 or equivalent. Staff

312 Introductory Biochemistry Laboratory (II, 2) Laboratory exercises illustrate chemical and physical properties of biomolecules, separation techniques, enzyme catalysis, symptoms of nutritional deficiency, quantification of metabolic end-products, and drug detoxification. (Lab. 4) Pre: credit or concurrent enrollment in 311. Tremblay

352 Genetics See Botany 352.

401 (or MIC 401) Quantitative Cell Culture (1, 3) Methods of mammalian cell culture used for quantitative studies of normal and abnormal cells. Basic techniques for propagation and manipulation of cells in culture. (Lec. 2, Lab. 3) Pre: MIC 211 or BCH 311. In alternate years. Next offered fall 1995. Staff

403 (or MIC 403) Introduction to Electron Microscopy (1, 2) Survey of techniques in electron microscopy. Discussion of advantages and limitations. Thin sectioning, negative staining, shadow-casting, freezing-etching, histochemical procedures, autoradiology, darkroom procedures, scanning electron microscopy, interpretation of electron micrographs. (Lec. 2) Pre: permission of chairperson. Hufnagel

405 Electron Microscopy Laboratory See Microbiology 405.

412 Biochemistry Laboratory (II, 3) Same as 312 plus an individual supervised laboratory project selected in consultation with the student. Projects may include enzyme action, enzyme induction, drug action, use of radioisotopes, and plant metabolism. (Lab. 6) Pre: credit or concurrent enrollment in 311. Tremblay

421 (or MIC 421) Cell Biology and Cancer (I, 3) Methods of study of the cancer cell and comparison to normal cell. Emphasis on cell culture experiments. (Lec. 3) Pre: MIC 211 or BCH 311. In alternate years. Next offered fall 1996. Staff

435 Physical Chemistry for Life Sciences (1, 3) Gases, solution, thermodynamics, equilibrium, kinetics, quantum theory, and photochemistry. (Lec. 3) Pre: one semester each of organic chemistry, physics, and calculus (two semesters of each recommended). Not open to chemistry majors. Hartman

437 Fundamentals of Molecular Biology See Botany 437.

451 Laboratory in Cell Biology See Botany 451.

453 Cell Biology See Botany 453.

454 Genetics Laboratory See Botany 454.

464 Biochemistry of Metabolic Disease (II, 3) A study of the primary and secondary molecular changes in human metabolic diseases. Topics include aging, alcoholism, arteriolosclerosis, diabetes, depression, and genetic diseases. (Lec. 3) Pre: 311 or 481. Staff

481 Principles of Biochemistry I (I, 4) Principles of biochemistry including bioenergetics, proteins and enzymology, carbohydrate metabolism, and oxidative phosphorylation. (Lec.

3, Rec. 1) Pre: CHM 228, 229. Not for graduate credit in biochemistry. Tremblay and Rhoads

482 Principles of Biochemistry II (II, 4) Principles of biochemistry including membranes, photosynthesis, lipid and nitrogen metabolism, hormones, and biosynthesis of DNA, RNA, and proteins. (Lec. 3, Rec. 1) Pre: CHM 228, 229 and BCH 481. Not for graduate credit in biochemistry. Tremblay, Rhoads, and Chandlee

484 Physical Methods in Biochemistry (II, 3) Experimental methods including spectroscopy, spectrofluorimetry, optical rotation, chromatography, and electrophoresis are applied to biochemical compounds and reactions. Physical principles and the calculation of important properties are stressed. (Lec. 1, Lab. 4) Pre: 435, 481, and permission of chairperson. Hartman and

491, 492 Research in Biochemistry (I and II, 1-6 each) Special problems. Student outlines the problem, carries on experimental work, presents the conclusions in a report. (Independent Study) Pre: permission of instructor. Not for graduate credit in biochemistry. Staff

495, 496 Biochemistry Seminar (I and II, 1 each) Discussion and presentation of research papers on selected subjects in biochemistry. (Lec. 1) Pre: 311, 482, or 582. Staff

502 Techniques in Microbial and Molecular Genetics

See Microbiology 502.

503 Electron Microscopy See Microbiology 503.

505 Laboratory in Electron Microscopy See Microbiology 505.

521 Physical Biochemistry (1, 3) The use of diffusion, sedimentation, viscosity, electrophoresis, isoelectric focusing, chromatography, and spectroscopy, (including linear and circular dichroism) to determine the size, shape, structure, interactions, and molecular weight of biological macromolecules. (Lec. 3) Pre: 435 or equivalent. In alternate years. Next offered fall 1995. Hartman

522 Plant Molecular Biology See Botany 522.

523, 524 Special Topics in Biochemistry (I and II, 1-3 each) Advanced work arranged to suit the individual needs of the student. Lecture and/or laboratory according to the nature of the problem. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits, S/U credit for 524, Staff

- 541 Laboratory Techniques in Biochemistry (1, 3) Potentiometric titration and buffers, spectroscopy (UV, visible, and IR), protein assays, radioisotopes, gel electrophoresis, chromatography (thin-layer, ion-exchange, and high-performance); and ultracentrifugation. (Lab. 9) Pre: general chemistry, organic chemistry, and credit or concurrent enrollment in at least one semester of biochemistry. Hartman
- 542 Proteins: Purification and Characterization (II, 3) Use of techniques for protein purification and activity studies. Laboratories involve enzymology, chromatography, investigation of soluble and membrane-bound receptors, gel electrophoresis and silver staining, thin-layer electrophoresis and autoradiography. (Lab. 9) Pre: 311 or 581 and permission of instructor. Rhoads
- 551 (or MTC 551) Topics in Biochemistry for the Clinical Scientist (1, 11, or SS, 3) Description of the major components of biochemistry as it relates to the medical sciences. Major concepts include molecular genetics, regulatory biochemistry, and medically related applied biochemistry. (Lec. 3) Offered every third year. Staff
- 552 Microbial Genetics See Microbiology 552.
- 572 Plant Biochemistry See Plant Sciences 572.
- 573 Developmental Genetics See Zoology 573.
- **579 Advanced Genetics Seminar** See Zoology 579.
- 581 General Biochemistry I (1, 3) First semester of a two-semester course on the principles of biochemistry. Topics include: bioenergetics, protein structure, enzymology, glycolysis, the tricarboxylic acid cycle, and oxidative phosphorylation, (Lec. 3) Pre: CHM 228 and 229. Rhoads and Tremblay
- 582 General Biochemistry II (II, 3) Second semester of a two-semester course on the principles of biochemistry. Topics include: photosynthesis, membranes, hormones, metabolism, the biosynthesis of DNA, RNA, and proteins. (Lec. 3) Pre: CHM 228 and 229. Rhoads, Trembiay, and Chandlee
- 583 Metabolism (1, 3) Intensive study of metabolic pathways of carbohydrates, lipids, and nitrogenous compounds; their interrelationships. Effects of hormonal and nutritional status on activity of these pathways. (Lec. 3) Pre: 581, 582, and/or permission of chairperson. In alternate years. Tremblay

- 584 Membrane Biochemistry (II, 3) Review of model systems for biochemical, physical, and chemical studies of cell membranes. Discussion of current research directed at a molecular understanding of membrane structure and function. (Lec. 3) Pre: credit or concurrent enrollment in 582 or permission of instructor. In alternate years. Next offered 1996-97. Rhoads
- 585 Recent Advances in Receptor Research (1, 1) Discussion of current research literature about receptors for hormones, pheromones, neurotransmitters, and other biological signals. Consequences of receptor activation will also be discussed. (Lec. 1) Pre: 311 and permission of instructor. May be repeated. Rhoads
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 622 Advanced Electron Microscopy (II, 2) The physical functioning of electron microscopes, high-resolution microscopy of macromolecules, newly available EM histochemical procedures, and computer processing of electron images. (Lec. 2) Pre: 403, 405, or permission of chairperson. Hufnagel
- 624 Advanced Electron Microscopy Laboratory (II, 2) Cleaning and aligning the electron microscope, development of independent project using advanced techniques, and formal presentation of results of individual projects to the class. (Lab. 6) Pre: credit or concurrent enrollment in 622 or permission of chairperson. Hufnagel
- 642 Biochemical Toxicology See Pharmacology and Toxicology 642.
- 651, 652 Research in Biochemistry (I and II, 3 each) Students are required to outline a research problem, conduct necessary literature survey and experimental work, and present the observations and conclusions in a substantial written report. (Independent Study) Pre: graduate standing. Staff
- 695, 696 Seminar in Biochemistry (I and II, 1 each) Presentation of selected topics from current literature or progress in thesis research, as assigned by the instructor. (Seminar) S/U credit. Rhoads
- 699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit:

Biology (BIO)

Chairperson: Professor Bullock (Biological Sciences)

- 101 Biology of Plants (I and II, 3) Introduction to major concepts of biology through a study of plants, including structure, function, reproduction, inheritance, ecology, and topics of current interest. Designed for nonscience majors. (Lec. 2, Lab. 1) Not open to students with credit in BOT 111. Staff (N)
- 102 General Animal Biology (I and II, 3) Introduction to life processes of animals, including humans. Examines biological aspects of inheritance, ecology, behavior, animal survey, and regulation of biosystems. Laboratory surveys general concepts of animal biology. (Lec. 2, Lab. 2) Goldsmith or Heppner (N)

Note: Students who elect 101 may not enroll in BOT 111, and those who elect 102 may not enroll in ZOO 111.

Botany (BOT)

Chairperson: Professor Bullock (Biological Sciences)

- 111 General Botany (I and II, 4) Structure, physiology, and reproduction of seed plants as a basis for understanding broad principles of biology and relation of plants to human life. Survey of plant kingdom. (Lec. 3, Lab. 2) Not open to students with credit in BIO 101. Koske or Staff (N)
- 262 Introductory Ecology See Zoology 262.
- 311 Plant Anatomy (1, 3) Structure of vascular plant tissues and organs as it relates to their function. Variations in anatomy, phylogeny of vascular tissue, anatomy of fossils, and the relation of structure to economic value. (Lec. 1, Lab. 4) Pre: 111 or permission of instructor. A. Roberts
- 321 General Morphology (II, 3) Representative forms of prokaryotes, algae, fungi, bryophytes, and vascular plants with emphasis on evolution, ecology, and life cycle. (Lec. 1, Lab. 4) Pre: 111 or permission of instructor. Staff
- 323 Field Botany and Taxonomy (1, 4) Collection, identification, and study of vascular flora of Rhode Island, including use of manuals and herbarium specimens. Field trips throughout Rhode Island. Discussion of principles, methods, and data used in classification. (Lec. 2, Lab. 4) Pre: 101 or 111. Killingbeck

- 332 (or PLS 332) Plant Pathology (II, 4) Nature, cause, and control of plant diseases. Use of basic techniques for identification of major types of plant diseases and their causal agents. (Lec. 4) Pre: 111 or permission of instructor. Mueller
- 352 (or BCH 352 or ZOO 352) Genetics (II, 3) Fundamental concepts of inheritance and variation in plants, animals, bacteria, and viruses. Methods of recombination, the process of mutation, gene structure, and function. (Lec. 3) Pre: 111 and ZOO 111, or permission of instructor. Not open to students with credit in ASP 352 (or PLS 352). Mottinger
- 418 Marine Botany (1, 3) Field and laboratory study of ecology and taxonomy of various communities of marine plants, primarily seaweeds and seagrasses. Methods of collecting, fixation, herbarium processing, and identification. Individual projects required. (Lec. 2, Lab. 3) Pre: 321 or permission of instructor. 262 recommended. In alternate years. Next offered 1995-96. Harlin
- 419 Freshwater Botany (1, 3) Field and laboratory study of ecology and taxonomy of various communities of freshwater microalgae, macroalgae, and higher plants. Methods of collecting, fixation, enumeration, identification, and crop estimation. Individual collections required. (Lec. 2, Lab. 3) Pre: 321 or permission of instructor. 262 recommended. In alternate years. Next offered 1996-97. Harlin or Staff
- 432 Mycology: Introduction to the Fungi (1, 4) Structure, development, cytology, distribution, and identification of fungi, with consideration of their importance in industry, medicine, plant disease, and organic decomposition. (Lec. 2, Lab. 4) Pre: BIO 101 or BOT 111; 321 recommended. Koske
- 437 (or ZOO 437) Fundamentals of Molecular Biology (1, 3) Biochemical basis of heredity as seen through the structure and function of nucleic acids. Includes DNA replication, transcription, translation, gene regulation, and gene organization in prokaryotes and eukaryotes. Current methods emphasized. (Lec. 3) Pre: MIC 211, BOT 352, and BCH 311, or permission of instructor. Norris or Goldsmith
- 445 Plant Physiology (II, 3) Growth and function of vascular plants from seed germination through flowering. Topics include energy metabolism, transport processes, environmental interactions, stress physiology, and developmental control. (Lec. 2, Lab. 3) Pre: 111, CHM 112, or permission of instructor. A. Roberts

- 451 (or BCH 451 or MIC 451) Laboratory in Cell Biology (II, 1) Analysis of subcellular processes, structures, and molecules using techniques including gel electrophoresis, spectrophotometry ultracentrifugation, and protein purification. Topics range from analysis of gene expression to subcellular localization of enzymatic activity. (Lab. 2) Pre: concurrent enrollment in 453 (or MIC 453) or permission of instructor. Norris
- 453 (or BCH 453 or MIC 453) Cell Biology (II. 3) Structure, replication, and function of eukaryotic cells at subcellular level. Topics considered include cell membranes, cytoplasmic organelles and nuclei, cell division, cellular differentiation, and methods. Emphasis on recent publications. (Lec. 3) Pre: two semesters of biology, BCH 311, junior standing, or permission of instructor. Norris
- 454 (or BCH 454) Genetics Laboratory (1, 3) Principles of classical and molecular genetics using microorganisms as well as higher plants and animals. Experimental techniques include human chromosome preparations, screening for growth requirements in microorganisms, mutagenesis, gel electrophoresis and nucleic acid hybridization. (Lab. 6) Pre: 352. In alternate years. Next offered 1995-96. Mottinger
- 455 Marine Ecology See Zoology 455.
- 457 Marine Ecology Laboratory See Zoology 457.
- 465 Phycology: An Introduction to the Algae (II, 3) Taxonomy, morphology, and evolution of algae. Use of ultrastructure in modern taxonomy; various systems of classification. Field trips to different communities. Labs on the taxa discussed and techniques for axenic culture. (Lec. 1, Lab. 3) Pre: 111, 321 recommended. Harlin
- **491**, **492** Special Problems (I and II, 1–3 each) Selected areas pertinent to needs of individuals or small groups. Class, seminar, or tutorial situations. (Independent Study) Open only to undergraduates on arrangement with staff. Staff
- 511 Special Readings in Developmental Plant Anatomy (1, 3) Intensive tutorial work, research, and reading on ontogeny of plant structures and morphogenetic mechanisms. (Independent Study) Pre: graduate standing and permission of instructor. Concurrent audit of 311 required. Offered on demand. A. Roberts
- 515 Light Microscopy Research Methods (1, 4) Introduction to optical techniques and biological specimen preparation for light microscopy

- with emphasis on application of these methods in biological research. Topics include: optics, embedding and sectioning, fluorescence and immunocytochemistry, and computer image analysis. (Lec. 1, Lab. 6) Pre: graduate standing or permission of instructor. Offered fall in evennumbered years. A. Roberts
- 521 Recent Advances in Cell Biology See Microbiology 521.
- 522 (or BCH 522) Plant Molecular Biology (1, 4) Analysis of gene expression in plants including topics such as choloroplast DNA, mitochondrial DNA, transgenic plants, and symbiotic genes. Laboratory includes cloning, restriction mapping, and hybridization. Emphasis on research literature. (Lec. 2, Lab. 4) Pre: 352, BCH 311, or permission of instructor. In alternate years. Norris
- 524 Methods in Plant Ecology (II, 3) Methods in analysis of vegetation and microenvironments. Emphasis on quantitative techniques in analysis of vegetation, soil, and microclimate; techniques in physiological ecology. (Lec. 2, Lab. 3) Pre: 111 and 262 (or ZOO 262) or equivalent; STA 412 recommended. In alternate years. Next offered 1995-96. Killingbeck
- 534 Physiology of the Fungi (II, 3) Life processes of fungi with particular emphasis on chemical composition, organic and mineral nutrition, toxic and stimulating agencies, and metabolism. Also stresses phenomena of variation of growth and sporulation as affected by various environmental factors. (Lec. 2, Lab. 2) Pre: 432 or permission of instructor. In alternate years. Koske
- 546 Seminar in Plant Stress Physiology (II, 1-2) Readings, discussion, and analysis of current literature with emphasis on biochemical and genetic aspects of responses. Students electing two credits will write review papers. (Seminar) Pre: one course in plant physiology and one course in biochemistry. In alternate years. A. Roberts
- 551 Seminar in Aquatic Botany (II, 1) Readings and discussion on current research involving algae and other aquatic plants. (Seminar) Pre: permission of instructor. May be repeated. Harlin
- 554 Cytogenetics (I, 4) Comparisons of various types of crossing-over, chromosomal abberations and their effects, mutation, and other cytogenetic pheonomena in fungi and higher organisms. Laboratory studies of meiosis in maize, identification of chromosomes, and induced rearrangements. (Lec. 2, Lab. 4) Pre: 352, 453, or permission of instructor. Mottinger

562 Seminar in Plant Ecology (II, 2) Recent topics and investigations pertinent to plant ecology. Library research, oral presentation of reports, and group discussions. (Seminar) Pre: 262 (or ZOO 262) or equivalent or permission of instructor. May be repeated. Killingbeck

579 Advanced Genetics Seminar See Zoology 579.

581, 582 Botany Seminar (I and II, 1 each) Preparation and presentation of papers on subjects in selected areas relating to botany. Required of graduate students majoring in botany. (Seminar) S/U credit. Staff

590 Botanical Techniques (1, 1) Current research techniques in the botanical sciences. Includes short-term participation in several ongoing research programs and an overnight, weekend field trip. (Lab. 3) Pre: graduate standing or permission of instructor. Staff

591, 592 Botanical Problems (I and II, 1-3 each) Special work arranged to meet the needs of individual students who are prepared for and desire advanced work in botany. (Independent Study) Offered only by arrangement with staff. Staff

593 Special Topics (I and II, 1-3) Covers the following specialized areas of botany: a) recent advances in mycology, b) physiological ecology of marine macroalgae, c) nutrient ecology of plants, and d) ecology of fungi. (Independent Study) Pre: permission of instructor. May be repeated for a maximum of 9 credits. Staff

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

661 Phytoplankton Taxonomy See Oceanography 661.

663 Phytoplankton Physiology See Oceanography 663.

664 Phytoplankton Ecology See Oceanography 664.

667 Advanced Phytoplankton Seminar See Oceanography 667.

691, 692 Botanical Problems (I and II, 1-6 each) Special work to meet the needs of individual students who are prepared to undertake special problems. (Independent Study) Pre: permission of chairperson. Staff

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

930 Workshop in Botany Topics for Teachers (I and II, 0-3 each) Especially designed for teachers of biology. Basic topics of botany from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification. Staff

Business (BUS)

354 (or COM 354) International Business Communications Exchange (1, 3) Examination of effective international business communication. Use of worldwide E-mail network to exchange views on business topics with counterparts abroad. (Lec. 3, Lab. 1) Pre: junior or senior standing or permission of instructor. Kim

601 Practicum in Business (1, 1) Course involves training and experience in teaching undergraduate business courses under the supervision of a full-time faculty member. Participation in the instructional development program is an essential component of the class. (Practicum) Pre: enrollment in Ph.D. program in business administration and permission of Ph.D. program director, Staff

602 Doctoral Colloquium in Business Administration (II, 1) Course involves presenting the results of at least one piece of original research to faculty and other Ph.D. candidates. When not presenting, students are expected to play an active role in critiquing the presented research. (Lec. 1) Pre: permission of Ph.D. proaram director. Staff

603 Special Problems in Business Research (I and II, 1-6) Advanced research and writing of theoretical and empirical papers in business administration in the student's area of specialization under the supervision of the faculty advisor. Pre: permission of instructor. S/U only. Staff

685 Knowledge Systems in Managerial Disciplines (I or II, 3) Examination of knowledge production and dissemination systems in management disciplines. Discussion of various paradigms and philosophy of science perspectives. Metascientific and research program issues are examined. (Seminar) Pre: Ph.D. candidate. Staff

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: enrollment in Phase III of the Ph.D. program in business administration. S/U credit.

Business Analysis and Computing (BAC)

Chairperson: Professor Ebrahimpour (Management Science and Information Systems)

101, 102 (QBA) Introduction to Business Analysis and Application I, II (I and II, 3 each) Selected mathematical tools and techniques for analysis of business and economic problems and as an aid in the decision-making process. Topics from finite and modern mathematics and applied differential and integral calculus. (Lec. 3) Pre: 101 for 102. Proficiency test available for 101. Staff (M)

201, 202 (QBA) Managerial Statistics I, II (I and II, 3 each) 201: General statistical methods used in the collection, presentation, analysis, and interpretation of statistical data. Includes frequency distribution, measures of central tendency and dispersion, probability theory, sampling distribution, central limit theorem, law of large numbers, estimation, and tests of hypothesis. Pre: 102 or equivalent. 202: Additional data analysis techniques, including tests of independence and goodness of fit, regression, correlation, analysis of variance, time series, and index numbers. (Lec. 3) Pre: 201. Staff

207 (QBA) Business Computing Applications (I and II, 3) Applications and concepts relevant to computers and management information systems, including data management, spreadsheet, communication, and word-processing packages. (Lec. 3) Pre: enrollment in College of Business Administration or permission of chairperson. Staff

500 (QBA) Computing for Management (I and II, 2) Computer concepts and programming using spreadsheet, database, presentation, communication, and other software packages. Emphasis on PC computing as an administrative and analytic tool for applications in management. (Lec. 2) Graduate credit for non-M.B.A. students only if MSI 600 is completed. Staff

520 (QBA) Mathematical Methods for Management (I and II, 3) Fundamental mathematical methods applied to the understanding and solution of managerial problems. Topics include the solution of systems of linear equations, differential calculus, and related areas. (Lec. 3) Graduate credit for students matriculated in the M.B.A. and M.S. in accounting programs only. Staff

530 (QBA) Statistical Methods for Management (I and II, 3) Introductory statistical methods applied to business problems. Topics include descriptive statistics, probability, distributions, inference, regression analysis, chi-square analysis, and introduction to time series. (Lec. 3) Graduate credit for students matriculated in the M.B.A. and M.S. in accounting programs only. Pre: 520 or permission of instructor. Staff

Business Law (BSL)

Chairperson: Professor Sink (Management)

- 333 Legal and Ethical Environment of Business I (I and II, 3) An introduction to the origins, framework, and concepts of the legal and ethical environment of business with emphasis on contractual relations. (Lec. 3) Pre: junior standing. Open to nonbusiness students with permission of chairperson. Staff
- 334 Legal and Ethical Environment of Business II (I and II, 3) Operations of the U.S. system of jurisprudence and ethics as it affects the law of contracts, sales, debtor-creditor rights, and business organizations. (Lec. 3) Pre: 333. Open to nonbusiness students with permission of chairperson. Staff
- 442 Property Interests (II, 3) Creation and transfer of personal and real property interests: suretyship and guarantee, bailments, real estate law, trusts and estates. (Lec. 3) Pre: 333 or permission of instructor. Staff
- 450 Consumer Law and Legislation (1, 3) Introduction to consumer law (state and federal). Coverage includes a study of statutory law, administrative agencies, and court decisions. (Lec. 3) Pre: 333 or permission of instructor. Laviano
- 460 Law and the Entrepreneur (II, 3) Study of legal issues of concern to the entrepreneur: business organizations; limited partnership syndications, bankruptcy, SEC regulations, and patent and trademark protection. (Lec. 3) Pre: 333. Dunn
- 501 Law and Accounting (II, 3) Introduction to C.P.A. law exam, question and answer techniques, coverage of most accounting-related legal subjects currently included on the C.P.A. exam. (Lec. 3) Pre: 600 or permission of chairperson. Hickox
- 600 Legal Environment of Business (I and II, 3) Coverage includes both substantive and procedural rules of law in the civil and administrative law field with emphasis on business, regulation, societal, and ethical issues. (Lec. 3) Pre: graduate standing. Staff
- 691 Directed Study in Business Law (I and II, 1-3) Advanced work under the supervision of a

staff member arranged to suit the individual requirements of the student, (Independent Study) Pre: permission of instructor, Staff

Chemical Engineering (CHE)

Chairperson: Professor Rose

- 101 Foundations of Chemical Engineering (/ and II, 1) An introduction to chemical engineering. Approaches to problem solving. Numerical presentation of data and data analysis. Block diagrams and flow charts. (Lec., Lab. 3) Knickle
- 102 Introduction to Chemical Engineering (II, 1) Provides understanding and appreciation of design in the curriculum. (Seminar) Staff
- 212 Chemical Process Calculations (1, 3) Orientation to chemical engineering, materialbalance computations on chemical processes. use of gas laws, vapor pressure, humidity, solubility, and crystallization, (Lec. 3) Pre: CHM 112 or 192. Barnett
- 272 Introduction to Chemical Engineering Calculations (II, 3) Introduction to the use of computers and numerical methods, including numerical solution of differential equations as applied to chemical engineering. (Lec. 2, Lab. 3) Pre: 212 and MTH 243. Rivero
- 313 Chemical Engineering Thermodynamics I (1, 3) Applications of the first, second, and third laws of thermodynamics involving thermophysics, thermochemistry, energy balances, combustion, and properties of fluids. (Lec. 2, Lab. 3) Pre: 212 or CHM 431 and MTH 243. Estrin or Knickle
- 314 Chemical Engineering Thermodynamics II (II, 3) Continuation of 313 with applications to compression, refrigeration, phase and chemical equilibria. (Lec. 2, Lab. 3) Pre: 313. Gregory or Knickle
- 322 Chemical Engineering Microlaboratory (II, 2) Use of microprocessors, A/D and D/A converters, sensors, and control hardware to analyze and control laboratory-scale processes. (Lab. 6) Pre: credit or concurrent enrollment in 348. Knickle
- 328 Industrial Plants (1, 1) Field trips to nearby plants demonstrating various phases of chemical engineering. Written reports are required. (Lab. 3) Pre: 348. Rose
- 332 Physical Metallurgy (I and II, 3) Fundamentals of physical metallurgy as they apply particularly to the engineering metals and their alloys. Properties, characteristics, and structure of metals, theory of alloys, thermal processing, and studies in corrosion. (Lec. 2, Lab. 3) Not

- open to students with credit in 333 or 437, Pre: CHM 101, 103, or 191. Rockett
- 333 Engineering Materials (I and II, 3) First course in engineering materials devoted largely. but not exclusively, to physical metallurgy. Includes structure and properties of pure substances and binary systems at equilibrium and, when used intentionally, at nonequilibrium. (Lec. 2, Lab. 3) Pre: junior standing or permission of instructor. Not open to students with credit in 332 or 437. Rockett
- 340 Materials Processing and Metrology I See Industrial and Manufacturing Engineering 340.
- 345, 346 Chemical Engineering Laboratory (/ and II, 2 each) Quantitative studies illustrating chemical engineering principles. Emphasis on report writing and the interpretation of experimental data. (Lab. 6) Pre: 348. Gray
- 347 Transfer Operations I (I, 3) Dimensional analysis; fluid statics; mass, energy, and momentum balances for fluid systems, boundary layers, turbulence, incompressible flow; flow through fixed beds of solids and fluidized beds; filtration. (Lec. 3) Pre: credit or concurrent enrollment in 313 or MCE 341. Gray
- 348 Transfer Operations II (II, 3) Heat transfer: conduction, convection, radiation. Mass transfer: distillation, liquid extraction, gas absorption; staged and differential contact. (Lec. 2, Lab. 3) Pre: 347. Bose
- 349 Transfer Operations III (I, 2) Diffusion and mass transfer, humidification and dehumidification, water cooling, absorption and ion exchange, drying, leaching. (Lec. 2) Pre: 348. Bose
- 351, 352 Plant Design and Economics (I and II, 3 each) Elements of plant design integrating the principles learned in previous courses. Emphasis is on optimum economic design and the writing of reports. (Lec. 1, Lab. 6) Pre: 314 and 348. Estrin, Gray, and Lucia
- 391, 392 Honors Work (I and II, 1-3 each) Independent study under close faculty supervision. Discussion of advanced topics in chemical engineering in preparation for graduate work. (Independent Study) Pre: junior standing and permission of chairperson. Staff
- 403, 404 Introduction to Ocean Engineering Processes I, II (I and II, 3 each) Theory and basic principles directly applicable to ocean-related processes. Desalinization, mining, combating oil spills, seawater as a coolant, seawater as a waste diluent, food processing, sulfur and petroleum

production, recovery minerals. (Lec. 2, Lab. 4) Pre: permission of instructor. Barnett and Knickle

- 425 Process Dynamics and Control (II, 3) Principles involved in automatic control of processing plants. Modeling and responses of dynamic systems, feedback control. (Lec. 3) Pre: MTH 243 and ELE 211 or 220 and credit or concurrent enrollment in 347 or MCE 354. Barnett or Knickle
- 437 Materials Engineering (I and II, 3) Introduction to engineering aspects of the fundamentals of the solid state. Structural, chemical, and physical properties of engineering materials with emphasis on ceramics, polymers, and composite materials. (Lec. 3) Pre: CHM 101, 103, or 191, or permission of chairperson. Brown
- 438 Failure Analysis and Prevention (II, 3) Failure analysis of engineering components. Examples of overload, fatigue, creep, corrosion, and electrical failures in metals, glasses, ceramics, composites, polymers, concrete, and semiconductors. Case studies, microscopic techniques, and prevention are emphasized. (Lec. 3) Pre: 332, 333, or 437. Brown or Gregory
- 447 (or FSN 447) Food Engineering (I, 4) Basic principles underlying unit operations of chemical engineering applied to food industries. Topics covered include heat transfer, fluid flow, extraction, and drying. (Lec. 3, Lab. 3) Pre: CHM 228, PHY 112, MTH 109, and permission of instructor. Not for major credit in chemical engineering. Barnett
- 464 Industrial Reaction Kinetics (1, 3) Modeling of simple chemical-reacting systems; computation of design parameters to satisfy system constraints and typical restraints (e.g., product rate and distribution) and conditions of optimality. (Lec. 3) Pre: 314 and CHM 432. Rivero
- **491**, **492** Special Problems (I and II, 1–6 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. Not for graduate credit in chemical engineering. Staff
- 501, 502 Graduate Seminar (I and II, 1 each) Seminar discussions including the presentation of papers based on research or detailed literature surveys. (Seminar) Required of all graduate students, with a maximum of 1 credit per year allowed. May be repeated for a maximum of 2 credits. S/U credit. Rose
- 513 Advanced Chemical Engineering Thermodynamics (1, 3) Applications of the first, second, and third laws of thermodynamics and their re-

- lation to chemical engineering processes. Emphasis on properties of fluids, chemical and physical equilibria, and refrigeration. (Lec. 3) Pre: 313, 314 or equivalent, graduate standing, or permission of chairperson. In alternate years. Estrin or Lucia
- 530 Polymer Chemistry (1, 3) Polymer structure, molecular forces, glass and crystalline transitions, solution properties, polymerization kinetics, molecular weight distribution, fractionation, viscoelastic properties, and transport processes. (Lec. 3) Pre: CHM 228 and CHE 332 or permission of instructor. Barnett and Yang
- 531 Polymer Engineering (I or II, 3) Polymer processing and mechanical properties of plastics, fibers, and elastomers. (Lec. 3) Pre: 348 or MCE 448 or permission of instructor. Barnett
- 532 Ceramic Engineering (1, 3) Properties of ceramic materials as related to starting materials and forming, densification, and finishing processes. Emphasis on resulting phases and microstructure. Application of physical and chemical principles to tailor properties to engineering needs. (Lec. 3) Pre: 437 or equivalent. Rockett or Gregory
- 533 Engineering Metallurgy (II, 3) Structures and properties of metals and alloys required to meet typical engineering problems; proper selection of tool materials; properties of stainless steels; materials of special importance in nuclear fields, etc. (Lec. 3) Pre: 333 or permission of instructor. Brown
- 534 (or OCE 534) Corrosion and Corrosion Control (II, 3) Chemical nature of metals, electrochemical nature of corrosion. Types of corrosion, influence of environment, methods of corrosion control. Behavior of engineering materials in corrosion with emphasis on industrial and ocean environments. (Lec. 3) Pre: permission of instructor. Brown
- 535 (or OCE 535) Advanced Course in Corrosion (1, 3) High-temperature corrosion, oxidation by gaseous environments, industrial problems with high-temperature corrosion. Materials selection and techniques to combat hightemperature corrosion. (Lec. 2, Lab. 3) Pre: 534 (or OCE 534) or permission of instructor. Brown or Gregory
- 537 (or OCE 537) Advanced Materials Engineering (II, 3) Engineering properties, molecular design, and applications of materials. Synthesis, fabrication, and processing of materials. Effects of environment on materials, materials products, devices, and systems. (Lec. 3) Pre: 437 and PHY 341. Gregory

- 539 Electron and Light Microscopy of Solids (1, 3) Theory and physical principles governing the design and use of light and electron optical systems in identification, analysis, and structural characterization of metals, ceramics, polymers, glasses, and composites. Emphasis on polarized light and scanning electron microscopy. (Lec. 3) Pre: 437 or equivalent. In alternate years. Gregory or Rockett
- 540 Phase Equilibria (II, 3) Interpretation, construction, and thermodynamics of one, two, three to n-component phase diagrams with examples of their use in chemical, ceramic, metallurgical, and mineral engineering. (Lec. 3) Pre: CHM 431 or equivalent. Rockett
- 541 Transport Phenomena I (1, 3) Analysis of transport processes in fluids with emphasis on diffusion of matter. (Lec. 3) Pre: 347, 348 or equivalent, graduate standing, or permission of chairperson. Bose
- 542 Advances in Interfacial Phenomena (1, 3) Topics will include capillarity, surface tension; surface thermodynamics, electrical aspects of surface chemistry; contact angles and wettability; emulsions and foams; adsorption from solutions; hydrodynamic stability of interfaces. (Lec. 3) Pre: CHM 431, 432 or equivalent, or permission of instructor. Bose
- 548 (or FSN 548) Separations for Biotechnology (II, 3) A study of methods of concentration used in the biotechnology industries for production and isolation of products. (Lec. 3) Pre: 348 or 447. Barnett
- 560 Chemical and Physical Processes of Integrated Circuit Fabrication (1, 3) Chemical and physical processes used in the fabrication of integrated circuits and devices. Emphasis on crystal growth, oxidation, CVD, plasma processes, photochemical processes, solid-state diffusion, lithography, and their relation to device performance. (Lec. 3) Pre: CHM 431, CHE 349, or equivalent. Gregory
- 573 Mechanical Metallurgy (I or II, 3) Behavior and response of metals to mechanical plastic forming. Property control by analysis and design of industrial metal processing. Principles of annealing, forging, rolling, extruding, rod, wire, and tube drawing. Recent advances and developments. (Lec. 3) Pre: permission of instructor. Brown
- 574 Biochemical Engineering I (1, 3) Introduction to biotechnology. Includes properties of biological materials, dynamics, control, and operation of biological systems and processing of

biological materials. (Lec. 3) Pre: permission of instructor. Rivero-Hudec

- 591, 592 Special Problems (I and II, 1–6 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. Staff
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 614 Advanced Chemical Engineering Thermodynamics (II, 3) Continuation of 513. (Lec. 3) Pre: 513. Estrin or Lucia
- 641 Transport Phenomena II (II, 3) Steady, unsteady, and multidimensional heat conduction; convection. Mass transport at low and high fluxes; diffusion and chemitheory; approximate methods for heat and mass transfer problems. (Lec. 3) Pre: 541 or permission of instructor. Bose
- 643 Fluid Dynamics (II, 3) Advanced problem course dealing with isothermal and nonisothermal flow of compressible and incompressible fluids. (Lec. 3) In alternate years. Knickle
- **644 Process Heat Transfer** (*II*, 3) Advanced study of heat transfer by conduction in the steady and unsteady state, radiation, and convection. (*Lec. 3*) In alternate years. Knickle
- **647** Mass Transfer I (I, 3) Advanced course dealing with the application of mass transfer theory in the distillation of binary, multicomponent, and complex mixtures. (Lec. 3) In alternate years. Gray
- 648 Mass Transfer II (II, 3) Advanced study of vapor-liquid equilibria and mass-transfer theory applied to gas-liquid systems; humidification and gas absorption, simple and multicomponent multicomponent systems, with and without chemical reaction. (Lec. 3) Gray
- 691, 692 Special Problems (I and II, 1–6 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 1.2 credits. Staff
- 699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Chemistry (CHM)

Chairperson: Professor W. Nelson

- **099 Basic Chemistry Lecture** (1, 3) Part one of a two-semester 101 sequence designed for students who need additional work in problemsolving skills. Successful completion of part one leads to a special section of 101 in the second semester. (Lec. 3) Not for General Education or program credit. S/U credit. Fasching
- 100 Chemistry of Our Environment (I and II, 3) Elementary chemistry for nonscience majors, emphasizing chemical aspects of the human environment. Chemistry of the biosphere, pollution, and aspects of industrial chemistry. (Lec. 3) Zoski, P. Brown, Yang, or Fisher (N)
- 101 General Chemistry Lecture 1 (I and II, 3) Fundamental concepts and principles in atomic structure, energy relationships, and reaction mechanisms balanced with applied and descriptive materials. (Lec. 3) Not open to students with credit in 103 or 191. Fasching and Pothier (N)
- 102 Laboratory for Chemistry 101 (*I* and *II*, 1) Experimental work illustrating certain concepts and principles of general chemistry. Experiments in solution, reaction rates, enthalphy, molar heat capacity, and electrochemistry. (*Lab.* 3) Pre: credit or concurrent enrollment in 101. Staff (N)
- 103 Introductory Chemistry Lecture (I, 3) One-semester general chemistry course designed for students whose curriculums require the one-semester organic chemistry course, 124. (Lec. 3) Not open to students with credit in 101 or 191. Fisher (N)
- 105 Laboratory for Chemistry 103 (1, 1) Fits course content of 103. (Lab. 3) Pre: credit or concurrent enrollment in 103. Staff (N)
- 112 General Chemistry Lecture II (I or II, 3) Elementary thermodynamics, chemical equilibrium in aqueous solutions, properties and reactions of inorganic species, practical applications of chemical principles. (Lec. 3) Pre: 101 or permission of instructor. Not open to students with credit in 104. C. Brown, Kirschenbaum, Nelson, or Euler (N)
- 114 Laboratory for Chemistry 112 (I or II, 1) Semi-microqualitative analysis and its applications. (Lab. 3) Pre: credit or concurrent enrollment in 112. Staff (N)
- **124** Introduction to Organic Chemistry (I and II, 3) Elementary principles of organic chemistry with emphasis on aliphatic compounds, especially those of physiological significance such as

- amino acids and proteins, carbohydrates, fats, and waxes. (Lec. 2, Lab. 3) Pre: 101, 102 or 103, 105, and concurrent enrollment in 126 required when curriculum specifies laboratory. Not open to chemistry or chemical engineering majors. Dain (N)
- **126** Laboratory for Chemistry **124** (*I* and *II*, *1*) Introduction to chemistry procedures, with emphasis on properties of substances of physiological significance. (*Lab. 3*) *Pre: credit or concurrent enrollment in 124. Not open to chemistry or chemical engineering majors.* Staff
- 191 General Chemistry (1, 5) Includes descriptive inorganic chemistry, qualitative analysis, and an introduction to quantitative analysis. Recommended for students in the chemistry curriculum who have had a year of high school chemistry. (Lec. 5) Not open to students with credit in 101 or 103. Kirschenbaum (N)
- 192 General Chemistry (II, 5) Continuation of 191. (Lec. 5) Zoski (N)
- 212 Quantitative Analysis (1, 4) Principles of gravimetric and volumetric analysis with detailed attention to solution of stoichiometric problems. Laboratory analysis of representative substances by gravimetric or volumetric procedures. (Lec. 3, Lab. 3) Pre: 112 and 114. Zoski
- **226** Organic Chemistry Laboratory (I and II, 2) Common techniques and typical preparative methods in both aliphatic and aromatic series. (Lab. 6) Pre: concurrent enrollment in 228. Not open to students with credit in 229 or 230. Staff
- 227 Organic Chemistry Lecture 1 (1 or 11, 3) General principles and theories with emphasis on classification, nomenclature, methods of preparation, and characteristic reactions of organic compounds in aliphatic series. (Lec. 3) Pre: 112 and 114 or 192. B. Vittimberga or Rosen
- 228 Organic Chemistry Lecture II (I or II, 3) Continuation of 227 with emphasis on the aromatic series. (Lec. 3) Pre: 227. B. Vittimberga or Rosen
- **229 Organic Chemistry Laboratory I** (SS, 1) Common techniques and typical preparative methods in aliphatic series. (Lab. 3) Pre: credit or concurrent enrollment in 227. B. Vittimberga
- **230 Organic Chemistry Laboratory II** (SS, 1) . Continuation of 229 with emphasis on the aromatic series. (Lab. 3) Pre: 229 or equivalent and credit or concurrent enrollment in 228. Only for students requiring a second credit of organic laboratory. B. Vittimberga

- 291 Organic Chemistry (I, 4) Development of principles and theory through an examination of structure, nomenclature, and reactions of organic compounds. (Lec. 3, Lab. 3) Pre: 192 or permission of instructor. Not open to students with credit in 227. Rosen
- 292 Organic Chemistry (II, 4) Continuation of 291 with extension to several additional families of compounds. (Lec. 3, Lab. 3) Pre: 291. Not open to students with credit in 228. Rosen
- 335 Physical Chemistry Laboratory (1, 2) Physical chemical properties of gases, liquids, and solutions; electrochemical cells; phase diagrams of binary and ternary systems; and chemical kinetics. Designed for chemistry majors. (Lab. 4) Pre: 431. May be taken concurrently with 431. Freeman or Yang
- 353, 354 Undergraduate Research (I and II, 1-6 each) Methods of approach to a research problem. Literature, laboratory work, and a report of an original problem or problems. (Independent Study) Pre: permission of instructor. May be repeated for a maximum of 12 credits. Staff
- 401 Intermediate Inorganic Chemistry (1, 3) Principles of inorganic chemistry broadly related to structure and reactivity. Many-electron atoms bonding theories, acid-base concepts, coordination chemistry, reaction mechanisms. (Lec. 3) Pre: 432. Nelson or Euler
- 402 Physical Inorganic Laboratory (II, 2) Synthesis of inorganic compounds emphasizing inert atmosphere and vacuum line techniques; characterization by spectroscopic and electromechanical techniques. (Lab. 6) Pre: 401. Euler
- 412 Instrumental Methods of Analysis (II, 3) Theory and application of optical and electrical instruments to solution of chemical problems: flame photometry, emission spectroscopy, ultraviolet, visible, and infrared spectrophotometry, colorimetry, turbidimetry, nephelometry, fluorometry, potentiometry, voltametric titration methods. (Lec. 3) Pre: 228 and credit or concurrent enrollment in 432. C. Brown
- 414 Instrumental Methods of Analysis Laboratory (II, 2) Applications of instrumental methods to the solution of problems in analytical chemistry. (Lab. 6) Pre: credit or concurrent enrollment in 412. Staff
- 425 Qualitative Organic Analysis (1, 2) Methods of identification of pure organic compounds. Separation of mixtures and identification of components by infrared and nuclear. magnetic resonance spectroscopy. (Lab. 6) Pre: 292 or equivalent and credit or concurrent enrollment in 427. Rosen

- 427 Intermediate Organic Chemistry (1, 3) Intermediate organic chemistry with emphasis on organic reaction mechanism, stereochemistry, spectroscopic characterization, and newer synthetic methods. (Lec. 3) Pre: 226, 228, or 292. Rosen and Traficante
- 431 Physical Chemistry I (I, 3) Gas laws, laws of thermodynamics, chemical equilibrium, phase equilibria, and electrochemistry. (Lec. 3) Pre: 112 or 192; MTH 142; and PHY 111 and 112 or PHY 213, 214, 285, 286. May be taken for graduate credit by graduate students whose undergraduate programs do not require physical chemistry. Freeman or Yang
- 432 Physical Chemistry II (II, 3) Atomic theory, quantum chemistry, bonding, molecular interactions, chemical kinetics, kinetic theory, and spectroscopy. (Lec. 3) Pre: 431. May be taken for graduate credit by graduate students whose undergraduate programs do not require physical chemistry. Freeman or Yang
- 436 Laser Spectroscopy Laboratory (II, 2) Applications to spectroscopy. Includes topics on optics, laser characteristics, and laser spectrometers as well as spectroscopic techniques. Designed for science and engineering majors. (Lab. 4) Pre: 101 and 112 or CHM 191 and 192 and PHY 111 and 112 or permission of instructor. Not for graduate credit for graduate students in chemistry. Staff
- 492 Seminar in Chemistry (II, 1) Preparation and presentation of papers on selected topics in chemistry. Required of seniors in chemistry. (Seminar) Pre: prior or concurrent enrollment in 432. Not for graduate credit. Staff
- 501 Advanced Inorganic Chemistry I (II, 3) Systematic analysis of bonding schemes and structural aspects of molecular systems encountered in inorganic chemistry. Special emphasis on electron density distributions, physical methods of analysis, and practical applications of quantum mechanics. (Lec. 3) Pre: 401. Euler
- 502 Advanced Inorganic Chemistry II (II, 3) Modern inorganic chemistry approached from experimental, theoretical, and descriptive points of view. Includes electronic structure and bonding in coordination chemistry, topology, thermodynamics of complex formation, mechanisms, lanthanides, and actinides. (Lec. 3) Pre: 401 or equivalent. Kirschenbaum
- 504 Physical Methods of Inorganic Chemistry (II, 3) Theory and application of numerous experimental techniques used for the elucidation of molecular and electronic structure of inorganic molecules. Primary emphasis is on nuclear

- magnetic resonance, optical, infrared, Raman, and electron paramagnetic resonance spectroscopies. (Lec. 3) Pre: 401 or permission of instructor, Euler
- 511 Advanced Analytical Chemistry I (1, 3) Fundamentals of electrochemistry, including a review of electricity and how it passes through conductors, electrochemical cells, electrode reactions, ionic solutions, polarization, transport mechanisms, voltammetry. Statistical treatment of experimental data. (Lec. 3) Pre: 412 or permission of instructor. Zoski
- 512 Advanced Analytical Chemistry II (II, 3) Fundamentals of chromatographic and electrophoretic separations and major spectroscopic techniques. Basic theory, instrumentation, advantages, limitations, and applications of these techniques as well as new instrumental developments are discussed. (Lec. 3) Pre: 412, PHY 340, and MTH 243, P. Brown
- 519 Theoretical Concepts in NMR (1, 3) The physical concepts of NMR phenomena are presented, beginning with signals generated in the probe, carried through the spectrometer console, into the computer, and finally represented as a spectrum. (Lec. 3) Pre: 292, PHY 112, and MTH 141, or equivalents, or permission of instructor. Traficante
- 520 Interpretation of One-Dimensional NMR Spectra (II, 3) Uses of chemical shifts and coupling constants are presented for interpreting one-dimensional (1D) proton and carbon spectra. Includes relaxation time measurements, decoupling, and simple 2D interpretation. (Lec. 3) Pre: 292, PHY 112, and MTH 141, or equivalents, or CHM 519 or permission of instructor. Traficante
- 521 Advanced Organic Chemistry I (1, 3) Emphasis on fundamental organic structure theory and reaction mechanisms. (Lec. 3) Pre: 226 and 228 or equivalent. Vittimberga
- 522 Advanced Organic Chemistry II (II, 3) Modern synthetic reactions and their application to such areas as natural products. (Lec. 3) Pre: 521 or permission of instructor. Rosen
- 524 Interpretation of Two-Dimensional NMR Spectra (II, 3) Covers the theoretical and practical aspects of two-dimensional (2D) NMR. Includes pulse sequences, instrument setup, and chemical applications. (Lec. 3) Pre: 519 and 520 or permission of instructor. Traficante
- 531 Advanced Physical Chemistry I (1, 3) Principles and applications of chemical thermodynamics and chemical statistical thermodynam-

ics. Includes the three laws of thermodynamics, statistical distributions, statistical thermodynamic ensembles and fluctuations. Applications to ideal gases and crystals, real fluid, and chemical equilibrium. (Lec. 3) Pre: 432 or permission of instructor. Yang

- **532** Advanced Physical Chemistry II (*II*, 3) Principles and applications of quantum chemistry. Includes the formal development of quantum theory and applications to electronic structure as well as other problems of chemical interest. (*Lec. 3*) Pre: 432 or permission of instructor. Yang
- 551, 552 Nonthesis Master's Research (I and II, 3 each) Research on original problem for fulfillment of research requirement of nonthesis master's degree. Literature survey, laboratory work, and detailed report required. (Independent Study) Pre: permission of chairperson.
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. A minimum of 6 credits is required of students who have chosen the thesis option for the master's degree. (Independent Study) S/U credit.
- 608 Inorganic Reaction Mechanisms (I or II, 3) Kinetics and mechanisms of reactions in aqueous solution: techniques, results, and theoretical interpretation. Instrumentation for studying rapid reactions in solution, relaxation methods, electron transfer rates, hydrolytic and solvolytic reactions, metal ion complexation, reactions of biochemical significance. (Lec. 3) Pre: 502 or permission of instructor. Next offered fall 1996. Kirschenbaum
- 616 Applied Analytical Techniques (II, 3) Application of analytical instrumentation and techniques to practical problems. Limitations and specific difficulties of analyzing complex matrices in practical research. Problem-oriented presentation. (Lec. 3) Pre: 511 and 512 or permission of instructor. P. Brown
- 618 Theory of Separations (II, 3) Companion to 616. In-depth presentation of theory of separation processes. Emphasis on methods development, advanced topics, and current advances using gas and liquid chromatography. (Lec. 3) Pre: 511 or permission of instructor. P. Brown
- 621 Advanced Topics in Physical Organic Chemistry (1, 3) Mechanistic aspects of organic chemistry: molecular orbital theory, thermal and photochemical cycloadditions and rearrangements. Consideration of carbenes, nitrenes, and

free radicals. Evaluation of steric, stereoelectronic, and secondary orbital effects. (Lec. 3)

Pre: 521 and 522 or permission of instructor. Staff

- 623 Advanced Topics in Synthetic Organic Chemistry (1, 3) Advanced topics in the synthetic aspects of organic chemistry. Synthetic reactions and techniques, strategies, and design. Conformational and stereochemical analyses, asymmetric synthesis, and natural product syntheses. (Lec. 3) Pre: 521 and 522 or permission of instructor. Staff
- 642, 643, 644 Graduate Seminar (I and II, 1 each) Results of detailed literature surveys are presented orally and in writing. Required for candidates for advanced degrees in chemistry. (Seminar) S/U credit. Staff
- 691 Special Topics (I and II, 1–3) Covers the following special research interests: a) carbohydrate chemistry, b) chemical kinetics, c) clinical chemistry, d) computer techniques in analytical chemistry, e) forensic chemistry, f) free-radical rearrangements, g) recent advances in analytical chemistry, h) light scattering, i) molecular orbital theory, j) pericyclic reactions, k) surface chemistry, l) X-ray analysis of organic molecules. (Independent Study) Pre: permission of instructor. May be repeated for a maximum of 6 credits. Staff
- 699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 930 (or EDC 930) Workshop in Chemistry Topics for Teachers (1 and 11, 0-3) Especially designed for teachers of physical sciences. Basic topics of chemistry from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification. Yang, Euler, and Long

Chinese (CHN)

Chairperson: Professor Grandin (Modern and Classical Languages and Literatures)

- 101 Beginning Chinese I (I and II, 3) Fundamentals of grammar and pronunciation, exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Chinese is required. Staff (F)
- **102** Beginning Chinese II (I and II, 3) Continuation of 101. (Lec. 3) Pre: 101 or equivalent. Staff (F)
- 103 Intermediate Chinese I (I and II, 3) Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. (Lec. 3) Pre: 102 or equivalent. Staff (F)

104 Intermediate Chinese II (I and II, 3) Continuation of 103. (Lec. 3) Pre: 103 or equivalent. Staff (F)

Civil and Environmental Engineering (CVE)

Chairperson: Professor Urish

- 216 Introduction to Civil and Environmental Engineering Systems (*l*, 3) Introduction to a wide range of civil and environmental engineering topics. Emphasis on application of mathematical techniques and computer programming to the solution of problems. (Lec. 2, Lab. 3) Pre: MTH 141 and CSC 201. Staff
- **220** Mechanics of Materials (*I and II*, *3*) Theory of stresses and strains, thin-walled cylinders, beam deflections, columns, combined bending and direct stresses, joints, and indeterminate beams. (*Lec. 3*) *Pre: MCE 162.* Staff
- 315 Surveying I (I, 3) Theory and practice of plane surveying including use, care, and adjustment of surveying instruments, boundary surveys, horizontal and vertical curves, earthwork, and topography. (Lec. 2, Lab. 3) Pre: MTH 141. Offered in fall of even-numbered years. Staff
- 322 Civil Engineering Laboratory (I and II, 2) Properties and behavior of engineering materials. Directed work in concrete and experimental stress analysis. Independent student projects. (Lab. 6) Pre: 220. Staff
- **334** Construction Planning and Specifications (1, 3) Introduction to construction planning; procedures involved in construction activities with major emphasis on heavy construction. (Lec. 3) Pre: 220. Offered in fall of odd-numbered years. Staff
- 347 Highway Engineering (II, 4) Principles of design of modern highways and streets including administrative and economic considerations; bituminous materials, pavements, geometric layout, drainage, construction, and maintenance. (Lec. 3, Lab. 3) Pre: 216. Lee
- **352 Structural Analysis I** (*I*, *3*) Structural systems: beams, frames, trusses; conjugate beam, virtual work, general method for indeterminate structures. Introduction to matrix methods. (*Lec. 3*) *Pre: 220.* Staff
- 353 Structural Analysis II (II, 3) Energy methods, slope deflection, moment distribution, influence lines, stability, matrix methods. Introduction to finite elements. (Lec. 3) Pre: 352. Staff

- 370 Hydraulic Engineering (II, 4) Applied hydraulics of flow in closed conduits and open channels. River and groundwater hydraulics. Analysis of hydraulic structures. Reservoir design. Principles of hydrology. (Lec. 3, Lab. 3) Pre: MCE 354. Wright
- 374 Environmental Engineering (I, 4) Urban water supply and treatment systems, sewerage treatment of municipal and industrial waste waters, stream pollution, air pollution, and disposal of solid waste materials. Methods of laboratory analysis for water and wastewater physical and chemical parameters. (Lec. 4) Pre: MTH 243 or permission of chairperson. Thiem
- 381 Geotechnical Engineering (I, 4) Engineering properties of soils, seepage, consolidation theory, calculation of stresses, failure theories, shear strength of sand, shear strength of clay. Laboratory studies of physical properties, compaction, seepage, consolidation, and shear strength. (Lec. 3, Lab. 3) Pre: 220 and credit or concurrent enrollment in MCE 354. Kovacs, Silva, or Veyera
- 391 Honors Work (I and II, 3) Independent study under close faculty supervision. Discussion of advanced topics in civil engineering in preparation for graduate work. (Independent Study) Pre: junior standing or permission of chairperson. Staff
- 396 Civil Engineering Analysis (II, 3) Problems from several fields of civil and environmental engineering solved by numerical methods with particular emphasis on use of electronic digital computers. Computer assignments in the area of each student's interest. (Lec. 2, Lab. 3) Pre: 216. Marcus
- 397 Introduction to Civil Engineering Design (1, 1) Preliminary planning for the integrated design project. Field trips and presentations by practicum engineers. (Lab. 3) Required of all juniors in civil and environmental engineering. Staff
- 442 Traffic Engineering (1, 3) Highway traffic characteristics and methods of providing for an effective, free, and rapid flow of traffic. Types of studies, regulations, control devices and aids, planning and administration. (Lec. 2, Lab. 3) Pre: 347 or permission of instructor. Lee
- 446 Transportation Engineering (II, 3) Transportation planning and design, technological characteristics and design considerations of major transportation systems. (Lec. 3) Pre: 347 or permission of instructor. Lee

- 453 Computer Analysis of Structures (1, 3) Introduction to matrix methods of structural analysis. Solutions of planar structures using a digital computer. (Lec. 3) Pre: 353 and 396. Staff
- 460 Analysis and Design of Metal Structures (II, 3) Properties of metal; current design codes; practice for the design of steel structural components; simplified and computer-oriented methods of analysis and design. Nonlinearities. Comprehensive design problems. (Lec. 2, Lab. 3) Pre: 352. Not for graduate credit in civil and environmental engineering. Staff
- 465 Analysis and Design of Concrete Structures (1, 3) Current criteria and practice for design of reinforced and prestressed concrete structures. Elastic and ultimate strength analysis of beams, slabs, columns, and frames. Comprehensive design problems. (Lec. 2, Lab. 3) Pre: 353. Not for graduate credit in civil and environmental engineering. Staff
- 470 Water and Wastewater Transport Systems I (II, 3) Computer analysis of water storage and transmission. Design of water distribution and wastewater collection systems. (Lec. 2, Lab. 3) Pre: 370 or 374 or permission of instructor. Thiem
- 471 Water and Wastewater Treatment Systems II (I or II, 3) Development of water quality standards. Design and analysis of physical, chemical, and biological treatment processes and their application to water and wastewater purification systems. (Lec. 2, Lab. 3) Pre: 374 or permission of instructor. Staff
- 472 Industrial Air Pollution (1 or 11, 3) Sources and characteristics of urban-industrial air pollution, allowable concentrations and control, stack sampling, chemical supplements in air pollution control, diffusion of pollutants, site selection and abatement programs. Air resources management programs. (Lec. 3) Pre: permission of chairperson. Staff
- 474 Water Quality Sampling and Analysis (II, 3) Laboratory and field work including sampling of surface and groundwater, chemical and biological analyses for water, monitoring, treated effluent quality control, and detection of hazardous contaminants. (Lec. 1, Lab. 6) Pre: 374 or permission of instructor. Offered in spring of oddnumbered years. Thiem
- 475 Water in the Environment (1, 3) Evaluation of water as a resource and its relation to the environment: hydrologic cycle, water budgets, water uses, drought, flood, current water prob-

- lems. (Lec. 3) Pre: MTH 243 and CVE 374 or permission of instructor. Offered in spring of evennumbered years. Urish
- 478 Hazardous Waste Disposal and Solid Waste Management (I or II, 3) Sources, collection, treatment, and disposal of hazardous wastes and solid wastes. Conservation, recovery, and reuse of material. Economics of waste treatment, disposal, and reuse. (Lec. 3) Pre: junior standing or permission of chairperson. Poon
- 483 (or OCE 483) Foundation Engineering (II, 3) Applications of geotechnical engineering principles to analysis and design of shallow foundations. Topics include foundation types, bearing capacity, settlement analysis, shallow foundations, earth pressures, retaining walls, introduction to deep foundations. (Lec. 3) Pre: 381. Kovacs, Silva, or Veyera
- 485 Engineering Geophysics See Geology 485.
- 491, 492 Special Problems (I and II, 1-6 each) Advanced work under supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. Staff
- 495 Civil and Environmental Engineering Systems (1, 3) Civil and environmental engineering projects are studied, analyzed, designed, and discussed in areas of water resources, pollution control, geotechnics, structures, and transportation using systems techniques. (Lec. 3) Pre: senior or graduate standing in civil and environmental engineering. Marcus
- 497 Civil Engineering Design I (I, 2) Detailed project planning, conceptual design and layout, environmental impact. Detailed project planning, conceptual design project. Speakers on ethics and professionalism. (Lab. 4) Pre: 397 and senior standing. Must be taken immediately prior to 498. Required of all seniors in civil and environmental engineering. Not for graduate credit. Staff
- 498 Civil Engineering Design II (II, 3) Elements of planning, design, and analysis of a civil engineering project integrating the principles learned in previous courses; a group project involving all major aspects of civil engineering design. (Lec. 1, Lab. 6) Pre: 397, 497, and senior standing. Not for graduate credit. Staff
- 545 Pavement Design (1, 3) Pavement types; pavement system components; stresses in the pavement structure. Design factors and criteria, pavement stabilization, structural design of flex-

ible and rigid pavements for highways and airports, pavement maintenance and overlay design. (Lec. 3) Pre: 347 or equivalent. Offered in fall of odd-numbered years. Lee and Kovacs

- 546 Urban and Rural Transportation See Community Planning 546.
- 547 Geometric Design of Highways (1, 3) Evaluation of alternative designs. Criteria and practices of geometric design; at grade intersections, interchanges, channelization, weaving parking facilities, and road appurtenances; safety considerations, lane balancing, ramps, and terminals. (Lec. 3) Pre: 347 or equivalent. Offered in fall of even-numbered years. Next offered fall 1996, Lee
- 548 Pavement Materials and Mix Design (II. 3) Surficial soils. Material characterization and testing; elastic, viscoelastic, and plastic behavior. Fracture, fatigue, and rutting; design of bituminous mixtures. Other pavement materials and additives. Pavement recycling. (Lec. 2, Lab. 3) Pre: 347 or equivalent. Offered in spring of even-numbered years. Next offered spring 1996. Lee
- 551 Finite Element Analysis in Civil Engineering I (I or II, 3) Direct stiffness method. Rayleigh-Ritz and Galerkin methods. Isoparametric elements. Frames, trusses, plane stress and strain. Bending of thin plates. (Lec. 3) Pre: 453 or permission of instructor. Staff
- 556 Variational Methods in Structural **Engineering** (1, 3) Introduction; principle of minimum potential energy; principle of minimum complementary energy; generalized variational formulations; principles with relaxed continuity requirements; application to structures and soils. (Lec. 3) Pre: 453 or permission of instructor. Offered every fourth year. Next offered fall 1996. Karamanlidis
- 560 Structural Design (I or II, 3) Behavior and design of structural systems; selected topics in steel, reinforced concrete, and prestressed concrete. (Lec. 3) Pre: 460 and 465. Offered every third year. Next offered spring 1996. McEwen, Marcus, and Tsiatas
- 561 Advanced Steel Design (I or II, 3) Selected topics in structural steel design following the LRFD specification, including plate buckling and postbuckling, torsion, plate girders, plastic design, frame stability, tall buildings, composite design, and earthquake-resistant design. (Lec. 3) Pre: 460 or permission of instructor. In alternate years. Next offered fall 1995. Tsiatas

- 565 Structural Dynamics (I or II, 3) Simplified models and their equations of motion; analytical solution methods; Fourier analysis; Duhamel integral; nonlinearities; computer-oriented solution algorithms and their implementation. Applications. (Lec. 3) Pre: 453. In alternate years. Next offered fall 1995, Staff
- 568 (or MCE 568) Theory of Plates (I or II. 3) Development of basic plate equations. Classical solution examples of rectangular and circular plates. Additional topics selected from: orthotropic plates, large deflections, finite element, and numerical solutions. (Lec. 3) Pre: 220 and MTH 244. Karamanlidis
- 570 Sanitary Chemistry (1, 3) Application of analytical chemistry to analysis of natural waters; physical chemistry and organic chemistry of aqueous media; chemical principles applicable to operations of sanitary engineering. (Lec. 3) Pre: permission of instructor. Thiem
- 571 Sanitary Chemistry Laboratory (II, 3) Applications of chemical laboratory procedures to control of water and wastewater treatment processes. (Lab. 9) Pre: 570. Thiem
- 572 Biosystems in Sanitary Engineering (I or II, 3) Microorganisms which constitute the biological systems in water pollution, water purification, and wastewater treatment. Application of principles of microbiology and biochemistry to analysis and design in fields of sanitary engineering and water resources. (Lec. 3) Pre: permission of instructor, Poon
- 573 Theory of Water Purification and Treatment (1, 3) Principles of modern water purification and engineering practices. Aeration, deodorization, sterilization, coagulation, filtration, water softening, iron removal, disinfection, and corrosion control. (Lec. 3) Thiem
- 575 Open-Channel Hydraulics (I or II, 3) Analysis of uniform, critical, varied flow, and unsteady flow in open channels. Principles will be applied to open-channel design. (Lec. 3) Pre: MCE 354. Wright
- 581 (or OCE 581) Experimental Geomechanics (I or II, 3) Advanced methods and techniques of geotechnical testing. Behavior of granular and cohesive soils with determination of engineering properties. Interpretation, evaluation, and engineering applications of test data. Emphasis on shearing strength, consolidation, bearing capacity, earth pressures, seepage, and slope stability. (Lec. 3) Pre: 381 or equivalent. Kovacs, Silva, or Veyera

582 Seabed Geotechnics See Ocean Engineering 582.

- 583 (or OCE 583) Advanced Foundation Engineering (I or II, 3) Applications of soil mechanics principles to analysis and design of pile foundations, drilled piers, flexible retaining structures, braced excavations, cofferdams, miscellaneous advanced foundation problems. (Lec. 3) Pre: 381 or equivalent, Koyacs, Silva, or Veyera
- 584 Designing with Geosynthetics (I or II, 3) Overview of geosynthetic materials, properties, test methods, and current standards. Design methods involving geotextiles, geogrids, geonets, geomembranes, and geocomposites. Applications to problems in geomechanics, geoenvironmental engineering, and transportationrelated fields. (Lec. 3) Pre: 381 or equivalent.
- 585 Soil Dynamics (I or II, 3) Vibration characteristics, wave propagation in soils, foundation vibration theory, foundation design for vibrating loads, vibration isolation, blast vibrations, dynamic soil properties, liquefaction potential, vibratory and dynamic compaction, computer implementation. (Lec. 3) Pre: 483 or equivalent. Kovacs or Veyera
- 587 Groundwater Flow and Seepage Pressures (II, 3) Hydrodynamics of fluid flow through porous media. Analytical methods for steady and unsteady seepage in aquifers; theoretical analysis with practical modification of seepage problems involving foundations, drainage structures, earth dams, and dewatering. (Lec. 3) Pre: 381 and permission of instructor. Urish or Kovacs
- 588 Groundwater Hydrology (II, 3) Quantitative methods of groundwater hydrology including determination of aquifer properties and yield. Modeling of groundwater systems for management quantity of water, movement of contaminants, and well design. Field and laboratory measurements. (Lec. 3) Pre: MCE 354 and CVE 381 or equivalent. Offered in spring af evennumbered years. Next offered spring 1996. Urish
- 591 Special Problems (1, 1-6) Advanced work under supervision of a staff member arranged to suit individual requirements of the student. (Independent Study) Pre: permission of chairperson.
- 592 Special Problems (II, 1-6) Advanced work under supervision of a staff member arranged to suit individual requirements of the student. (Independent Study) Pre: permission of chairperson. Staff

596 Numerical Methods in Structural Engineering (I or II, 3) Methods of successive approximations and numerical procedures in the solution of stress, vibration, and stability problems in structural members. Nonuniform members, elastic supports, plates, torsion. (Lec. 3) Pre: permission of chairperson. Staff

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

601, 602 Graduate Seminar (I and II, 1 each) Discussions and presentation of papers based on research or detailed literature surveys. (Seminar) Required of all graduate students, with a maximum of 1 credit per year allowed. May be repeated for a maximum of 2 credits. Staff

641 Pavement Evaluation and Rehabilitation (II, 3) Pavement performance concepts. Criteria for pavement evaluation. Measurement of pavement distress and structural capacity. Analysis and interpretation of pavement evaluation data. Correlation of data with performance ratings. Formulation and evaluation of maintenance and rehabilitation alternatives. (Lec. 3) Pre: 545 or equivalent. Offered in spring of odd-numbered years. Next offered spring 1997. Lee

655 Finite Element Analysis in Civil Engineering II (1, 3) Isoparametric models for threedimensional continua, hierarchical elements. Reduced integration concepts, penalty method, discrete Kirchhoff method. Eulerian, total, and updated Lagrangian formulations. (Lec. 3) Pre: 551 or permission of instructor. Offered in fall of even-numbered years. Next offered fall 1996. Staff

657 Structural Stability (II, 3) Introduction: principal forms of equilibrium paths and their stability; conservative elastic systems; buckling of prismatic members; imperfections; plastic deformations; postbuckling of frames and reticulated structures; numerical methods; catastrophe theory. (Lec. 3) Pre: 556 or permission of instructor. Karamanlidis, McEwen, and Tsiatas

665 Advanced Topics in Structural Dynamics (I or II, 3) Equations of motion of systems and continuous bodies; analytical and numerical solution methods; large deflections and plasticity; time-stepping algorithms; active control of tall buildings; earthquake-resistant structures; applications. (Lec. 3) Pre: 565. Offered every third year. Next offered spring 1996. Karamanlidis, McEwen, and Tsiatas

667 Probabilistic Methods in Structural Engineering (1 or 11, 3) Probabilistic applications in structural analysis and design. Statistical models

for forces and material strengths. Component and system structural reliability. Random vibration applications in structural engineering. (Lec. 3) Pre: introductory course on probability and 565 or OCE 522, or permission of instructor. Tsiatas

668 Theory of Shells

See Mechanical Engineering 668.

672 Water Pollution Control and Treatment of Wastewater (I or II, 3) Wastewater characteristics, effects, and purification in natural water, government control strategies and impacts, cost of control, theory and mathematical concepts of secondary and tertiary treatment process, their limitations, and late developments. (Lec. 3) Pre: one year of chemistry and biology, MTH 243 and CVE 572 or their equivalents, and permission of instructor, Poon

677 Stream and Estuarine Analysis (1 or 11, 3) Fundamentals and mathematical concepts of physical and biological factors applied to the evaluation of the pollution capacity of streams and estuaries. (Lec. 3) Pre: MTH 244. Wright

681 Advanced Geotechnical Engineering I (I or II, 3) Advanced study of geotechnical principles and theory. Physical and chemical properties of soils; particulate mechanics; effective stress principle; permeability; steady-state and transient seepage; consolidation; stress distribution; miscellaneous topics. (Lec. 2, Lab. 3) Pre: 381 or equivalent and permission of instructor. Kovacs, Silva, or Veyera

682 Advanced Geotechnical Engineering II (I or II, 3) Advanced study of geotechnical engineering principles and theory. Stress-strain behavior; constitutive relationships; failure theories; applications of theories of elasticity. viscoelasticity, and plasticity; shear strength of sands; shear strength of clays; slope stability analysis; miscellaneous topics. (Lec. 3) Pre: 381 or equivalent and permission of instructor. Kovacs, Silva, or Veyera

687 Geotechnical Earthquake Engineering (1 or II, 3) Seismology and seismicity; surface faulting and ground motion characteristics; response spectra; dynamic soil properties; dynamic response of soil layers, embankments, and slopes; influence of local soil conditions on site response; evaluation of design earthquakes; response analysis. (Lec. 3) Pre: 483. Kovacs, Tsiatas, or Veyera

688 Marine Geomechanics See Ocean Engineering 688.

691, 692 Special Problems (I and II, 1-6 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. Staff

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Classics (CLA)

Section Head: Associate Professor Suter

391 Ancient Laughter: The Comic Tradition in Greece and Rome (I or II, 3) Introduction to the comic tradition in Western literature through its origins in Greece and Rome. Readings in English translation include examples of comic drama, novel, and satire. (Lec. 3) Suter (A) (F)

395 Greek Mythology: Gods, Heroes, and Humans (I and II, 3) Nature and function of myth in the ancient world and today: ideas of divinity, relationship of divine to human, origins of cosmos and human society, male and female principles, power hierarchies, coming of age, the heroic experience. Theories of myth analysis. Readings in English translation. (Lec. 3) Koken (A) (F)

396 Myths of Rome (I and II, 3) Nature and function of myth in Roman society; origins and influence of Romanitas as found in Roman literature: history, epic, lyric, novel. Roman religion: magic, animism, anthropomorphism, gods and goddesses. Readings in English translation. (Lec. 3) Suter (A) (F)

397 Greek Myth and Tragedy (I or II, 3) Relationship between Greek myth and classical tragedy, birth and evolution of tragedy (ancient, French, English, American), employment of the same myth for different dramatic and political purposes. Readings in English translation. (Lec. 3) Koken (A) (F)

See also course listings under GRK and LAT for Greek and Latin language offerings.

Communication Skills (CMS)

101 College Communication Skills (I and II, 6) An integrated, interdisciplinary approach to the acquisition of communication skills. Instruction given in composition and oral communication utilizing a theoretical model common to both. (Lec. 6) Not open to students with credit or concurrent enrollment in COM 101 or WRT 101. Staff (Cw) (C)

Communication Studies (COM)

Chairperson: Associate Professor S. Wood

- 101 Public Speaking (I and II, 3) Development and improvement of fundamentals and attitudes essential to effective and ethical communication. Preparation, organization, and presentation of the fundamentals in various speaking environments. Students demonstrating proficiency may petition for advanced placement. (Lec. 3) Not open to students with credit or concurrent enrollment in CMS 101. Staff (C)
- 103 Interpersonal Communication (I and II, 3) Impact of perception, listening, self-acceptance, nonverbal messages, and language on interpersonal communication. Emphasis on improving skills. (Lec. 3) Staff (C)
- 200 The Art of Human Communication (I and II. 3) Selected communication theories from classical to contemporary times are examined. Focus on the relationship between cultures and communication theories. Emphasis on application of theoretical principles to contemporary communication situations. (Lec. 3) Staff (L)
- 205 Great American Speeches (I and II, 3) The study of historically significant ideas, issues, and causes through the critical analysis of selected American speeches. (Lec. 3) Staff (L)
- 206 Introduction to Communication Studies (I and II, 3) Survey of the major areas within the field of speech communication. Emphasis on developing the student's ability to identify, define, formulate, investigate, and describe problems and phenomena within the discipline. (Lec. 3) Staff
- 210 Persuasion: The Rhetoric of Influence (/ and II, 3) Analysis of communication influencing beliefs, attitudes, and/or behavior. Investigation of rhetorical elements of logical, emotional, and ethical appeals. Study of elements critical for effective producers and consumers of persuasion. (Lec. 3) Staff (L)
- 215 Argumentation and Debate (I and II, 3) Introduces argumentation theory through the model of academic debate. Stresses criticalthinking skills including analysis, research, organization, and written and oral presentations. Debates are conducted on important social and political issues. (Lec. 3) Staff
- 216 Forensic Workshop (I and II, 1) Open to students participating in speech or debate activities. (Practicum) Pre: permission of the director of debate. May be repeated for a maximum of 4 credits. Staff

- 220 Small Group Communication (I and II, 3) The study of communicative functions in the small group setting. Includes group dynamics, leadership, problem solving, and decision making. Emphasis on theory and application. (Lec. 3) Schultz and Staff (S)
- 231 Oral Interpretation of Literature (I and II, 3) Recognition and appreciation of content and communication of thought and emotion through oral reading. Practice in the analysis and interpretation of poetry and prose fiction. (Lec. 3) Quainoo (A)
- 301 Systems of Communication (II, 3) Investigation of communication networks in nonsymbolic and symbolic systems, focusing on general systems theory, cybernetics, the human physiological system, the computer, and animal and human code systems. (Lec. 3) Brownell
- 302 Advanced Public Speaking (I and II, 3) Advanced study of public speaking and speech writing. Speaking in television and business settings. Speaking with a manuscript, writing speeches for others, and speech criticism. (Lec. 3) Pre: 101. Devlin and Wood
- 306 Research Methods in Communication (I and II, 3) Basic concepts and techniques of communication research. Emphasis on analysis of existing communication research and on application of research processes to communication problems or phenomena. (Lec. 3) Pre: 206 or permission of instructor. Anderson, Chen, Ketrow, Mundorf, and Schultz
- 310 Contemporary Oral Communication (1 and II, 3) Analysis of contemporary rhetorical theories as they relate to speaking in business, civil rights, education, government, labor, law, and religion. Focus each semester on a critical contemporary issue. (Lec. 3) May be repeated for credit. Staff
- 314 Nonverbal Communication (1, 3) Examines nonverbal communication codes, including their structures, usages, and interrelationships. Stresses student understanding, analysis, and application of nonverbal communication through lecture, discussion, and experiential activities. (Lec. 3) Pre: junior standing and 101 or 103 or permission of instructor. Staff
- 315 Environmental Dimensions of Communication (1, 3) Investigation of the physical properties of the environment and how individuals' perception and design of these properties affect their communication in personal, social, and public situations. Analysis and experimentation with the ways the environment can be used to

- facilitate communication. (Lec. 3) Anderson and Brownell
- 317 Advanced Argumentation and Debate (II, 3) Analysis of the theories of argumentation through specialized forms of debate. Use of legislative, legal, and other situationally specific forms of debate to apply the theories of argumentation. (Lec. 3) Wood
- 320 Oral Communication for Business and Professions (I or II, 3) Examination of business and organizational communication. Emphasis on channels of communication, communication barriers, leadership, and the development of communication skills for business and professions. (Lec. 3) Ketrow, Doody, and Staff
- 331 Contemporary Approaches to Prose Fiction (II, 3) Oral interpretation of the short story and novel. Contemporary approaches to the oral tradition of storytelling through individual and group performances and written analysis. (Lec. 3) Quainoo
- 332 Oral Interpretation of Poetry (1, 3) Practice in the oral interpretation of poetry through oral performance and written analysis. (Lec. 3) Pre: 231 or permission of instructor. In alternate years. Next offered 1996-97. Quainoo
- 333 Oral Interpretation of Black Literature (II, 3) Study and oral presentation of literature by black American authors. Class performances, discussion, reports, and analysis of the literature. (Lec. 3) Quainoo
- 337 Intercultural Communication (I and II, 3) Study of cultural similarities and differences as they affect communication within and across cultural boundaries. (Lec. 3) Doody and Chen
- 340 Electronic Media Programming (I or II, 3) Overview of various aspects of the operation of radio, television, and cable TV, including industry structure, audience measurement (ratings), programming, and promotion. (Lec. 3) Pre: junior standing. Mundorf
- 354 International Business Communications Exchange See Business 354.
- 391, 392 Honors Work (I and II, 1-3 each) Thesis work or an equivalent independent project under faculty supervision for honors students participating in the University Honors Program. (Independent Study) Pre: admission to departmental Honors Program. Staff
- 400 Rhetoric (1, 3) Inquiry into standards for the evaluation and improvement of instrumental discourse. Detailed considerations of inven-

tion, disposition, and style in oral and written communication. (Lec. 3) Bailey

- 403 Advanced Interpersonal Communication (1, 3) Critical study of major issues and theories of interpersonal communication. Focuses on history, models, and research, including conversation, influence, intimacy, language, and relationships. (Lec. 3) Pre: 103 or permission of instructor. Schultz or Ketrow
- 415 The Ethics of Persuasion (II, 3) Relation of persuasion to ethics is examined. Purposes, means, results, and contexts are considered in making rhetorical judgments of interpersonal, political, and institutional communications. (Lec. 3) In alternate years. Next offered 1996-97. Bailey
- 420 Seminar in American Public Address and Criticism (II, 3) Study of selected American speakers, speeches, and/or movements. Rhetorical analysis used to measure the impact of speakers, speeches, and movements studies. (Seminar) Anderson and Doody
- 430 Political Communication (1, 3) Analysis of political communication in campaign and nonelection situations. Examination of ghost writing; content analysis, strategies, image making of political speaking; TV and radio presentations; influences on and effects of political communication. (Lec. 3) Devlin
- 435 Directing Group Performance of Nondramatic Literature (II, 3) Practice in Reader's Theatre and Chamber Theatre. Emphasis on direction as a rhetorical device in group work with nondramatic literature and compilation of scripts for individual and group performance. (Lec. 3) Pre: 231. In alternate years. Quainoo
- 440 Telecommunications Processes and Audience Behavior (I and II, 3) Surveys theories and research concerning role of electronic mass media in contemporary society. Focuses on interplay between mass media content and audience behavior; provides framework for analyzing current telecommunications issues. (Lec. 3) Pre: 210 or permission of instructor. Mundorf
- 445 Television Advertising (II, 3) Examination of theory and practice in television advertising. Students will acquire and analyze commercials made by professionals and create and produce television advertisement. (Lec. 3) Not for graduate credit. Devlin
- 450 Organizational Communication (I and II, 3) Surveys theory and practice of communication in organizations. Examines interface of or-

ganizational, management, and communication theories. Explores human interaction, flows and formats in organizations; stresses student analysis of organizational communication. (Lec. 3) Pre: 320. Ketrow; Schultz, and Staff

- 460 Communication and Conflict Intervention (II, 3) An examination of the role of communication theories in conflict intervention in interpersonal, group, and organizational settings. Emphasis on applying theories through simulations, role plays, case studies, and discussions. (Lec. 3) Pre: 103 or 220. Anderson, Doody, or Schultz
- 471, 472 Internship in Communication Studies (I and II, 1-3 each) Provides the student with direct supervised participation in a variety of communication situations and occupations. (Practicum) Pre: 18 credits in communication studies and permission of chairperson. S/U only. Staff
- **491, 492 Special Problems** (I and II, 1–3 each) Selected areas of study pertinent to oral communication. Instruction may be offered in class seminar or tutorial environments according to specific needs and purposes. (Independent Study) Pre: permission of chairperson. Staff

Communications

Communication Skills

101 College Communication Skills

Communication Studies

- 101 **Public Speaking**
- 103 Interpersonal Communication
- 215 Argumentation and Debate
- 220 Small Group Communication
- 302 Advanced Public Speaking

English Language Studies

- 112 English as a Second Language I
- 122 English as a Second Language II

Journalism

- 220 Media Writing
- **Public Affairs Reporting and Writing**
- Magazine Article and Feature Writing

Writing

- 002 Writing Lab
- 101 Composition
- 123 College Writing for Returning Students
- Introduction to College Research Writing
- **Business Communications**
- 235 Writing with Computers
- Writing Nonfiction
- 333 Scientific and Technical Writing

Communicative Disorders (CMD)

Chairperson: Associate Professor Singer

- 260 Speech Development and Correction (II, 3) Normal development of human speech, causes of speech and hearing disorders, and techniques of speech and hearing rehabilitation. For those in teaching, nursing, guidance, psychology, and education of the physically handicapped and mentally retarded. (Lec. 3) Staff
- 261 Survey of Hearing and Deafness (II, 3) Introduction to the science of audiology. Pathologies of the hearing mechanism, basic methods of audiometry, interpretation of the audiogram, hearing aids, and rationale and methods in hearing conservation programs. Observations and practice in the Rhode Island Hospital Hearing and Speech Center. (Lec. 3) Staff
- 372 Auditory and Speech Mechanisms (1, 3) Structure and function of the organs of hearing and speech as they relate to normal and pathological communication; theories of cortical involvements, central and peripheral nervous systems relevant to rehabilitation procedures. (Lec. 3) Pre: junior standing. Staff
- 373 Phonetics (1, 3) International Phonetic Alphabet; analysis of phonetic and phonemic elements in major American English dialects; practice in transcription of standard and defective speech. (Lec. 3) Pre: junior standing. Staff
- 374 Communication Processes (I, 3) Psychocommunication processes basic to speech; theories of language learning; psychology of hearing and deafness; interrelationships between speech and personality. (Lec. 3) Pre: junior standing.
- 375 Language Development (1, 3) Development phenomena in speech and language; causal factors of delayed speech and language; survey of evaluative and habilitative programs for children with deviant language development. (Lec. 3) Pre: junior standing. Staff
- 376 Hearing and Speech Science (II, 3) Physical properties and speech signal, analysis of the physical bases of speech production and speech perception. (Lec. 3) Pre: 372 and 6 credits in natural sciences. Staff
- 391, 392 Honors Work (I and II, 1-3 each) Thesis work or an equivalent independent project under faculty supervision for honors students participating in the University Honors Program. (Independent Study) Pre: admission to departmental Honors Program. Staff

- 440 Advanced Head and Neck Anatomy See Dental Hygiene 440.
- 465 Clinical Methods in Communicative Disorders (I and II, 4) Observation of diagnosis and treatment of communicative disorders: developing interviewing, report writing, and counseling techniques: introduction to diagnostic procedures; establishing therapeutic goals, treatment, and remediation of various disorders. (Lec. 3, Lab. 2) Pre: 260, 261, and three of the following-372, 373, 374, 375, 376, Not for graduate credit in communicative disorders. Staff
- 475 Gestural Communication (II, 3) Visual language systems with emphasis on the cherology and syntax of Ameslan, and levels of language among deaf communicators; finger spelling and sign language for educational, rehabilitative, and artistic goals studied. (Lec. 2, Lab. 2) Pre: junior or graduate standing. Staff
- 491, 492 Special Problems (I and II, 1-3 each) Selected areas of study pertinent to communicative disorders. Instruction may be offered in class seminar or tutorial environments according to specific needs and purposes. (Independent-Study) Staff
- 504 Speech and Hearing Research (II, 3) Types of research in speech pathology, audiology, and communication science; critiques of representative models with special emphasis on experimental research; individual pilot projects or master's thesis. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor. Staff
- 551 Measurement of Hearing (1, 3) Diagnostic protocols and practicum for routine audiological assessment; etiology and symptomatology of hearing disorders; overview of aural rehabilitation including hearing aids. (Lec. 2, Lab. 1) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor. Singer
- 552 Advanced Measurement of Hearing (II, 3) Advanced audiometrics: speech audiometry: immittance measures, cochlear measures; retrocochlear measures; pseudohypacusis measures, and central auditory measures. (Lec. 2, Lab. 2) Pre: 551 or permission of instructor. Staff
- 553 Pediatric Audiology (I, 3) Theoretical and methodological approaches to the identification and management of children with auditory disorders. Topics discussed include auditory development, audiometric evaluation, and hearing aids, (Lec. 3) Pre: 551 or permission of instructor. Staff

- 554 Rehabilitative Audiology (1, 3) Theoretical and methodological approaches to aural rehabilitation of the hearing-impaired adult, Topics discussed include use of amplification, speech reading, auditory training, and case management. (Lec. 3) Pre: 551 or permission of instructor. Staff
- 555 Amplification for the Hearing Impaired (II, 3) Electroacoustics and psychoacoustics of wearable hearing aids; selection and fitting procedures, counseling; classroom amplification systems. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor. In alternate years. Singer
- 556 Electrophysiological Measures in Audiology (II, 3) Basic electrophysiologic procedures, instrumentation, electrocochleography, auditory brain stem responses, and middle, late, and long-latency auditory evoked potentials. (Lec. 2, Lab. 2) Pre: 551, 552, or permission of instructor. Staff
- 560 Disorders of Phonation (II, 3) Etiology and symptomatology of vocal pathology; intervention strategies for organic and functional voice disorders; emphasis on rehabilitation team approach to voice-resonance problems associated with cleft palate. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor. Staff
- 561 Articulation Disorders (1, 3) Assessment, design, and implementation of therapeutic management programs for various speech production disorders at the articulatory and phonological levels. (Lec. 3) Pre: 372, 373, 374, 375, or equivalent, or permission of instructor. Staff
- 564 Language Disorders in School-Aged Children (II, 3) Study of communication deficits in learning-disabled school-aged children; differential diagnoses; assessment of cognitive functioning; language processing and discourse; therapeutic strategies for training abstract and functional language. (Sem. 3) Pre: graduate standing or permission of instructor. Culatta
- 569 Diagnostic Procedures (I, 3) Major procedures for assessment and evaluation in speechlanguage pathology. Implications of diagnostic data for referrals, prognosis, therapeutic programs, and consultations. (Lec. 3) Pre: 372, 373, 374, 375, or equivalent, or permission of instructor. Staff
- 570 Clinical Practicum in Communicative Disorders (I and II, 1-5) Supervised assessment and rehabilitation procedures with persons experiencing communicative disorders in

- speech-language pathology and/or audiology. Practicum sites scheduled on campus and within hospital, school, institutional, and private settings. (Practicum) Pre: graduate standing, 25 observation hours, and appropriate course work.
- 572 Medical Audiology (1, 3) Diagnostic implications of audiometry for various organic disorders; supportive audiological information relevant to medical and surgical interventions; differential data associated with otosclerosis. Meniere's disease. VIIIth cranial nerve tumors. and malingering. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instruc-
- 573 Contemporary Problems in Audiology (II, 3) Critical review of current research and controversial issues within the profession; student selects one topic for independent study. (Lec. 3) Pre: 372, 373, 374, 375, araduate standing, or permission of instructor. Staff
- 574 Environmental Audiology (II, 3) Hearing problems in industry, the military, and other high-noise-level environments; medico-legal aspects of hearing loss; hearing conservation programs in public schools. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor. Singer
- 577 Speech and Language for the Hearing Impaired (II, 3) Assessment, development, and/ or maintenance of voice, speech, and language skills associated with congenital or adventitious deafness; seminar approach to strategies in current practice with children and adults. (Sem. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor. Staff
- 580 Augmentative Communication (II, 3) Assessment, selection, and implementation of augmentative communication devices and systems for severely communicatively impaired persons emphasizing the transdisciplinary approach, fabrication, and experience with current electronic equipment. (Lec. 3) Pre: course work in aphasia, cerebral palsy, or head trauma, and permission of instructor. Lytton or Carlson
- 581 Cerebral Palsy (1, 3) Identification of type of cerebral palsy by location of lesion, motor symptomatology, and additional handicaps; role of the speech clinician on the team; types of speech therapy with emphasis on the Bobath approach: current research and controversial issues. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor. Staff

582 Motor Speech Disorders (II, 3) Diagnosis and management of apraxia of speech and dysarthrias. Aspects of neuro-anatomy relevant to the production of speech. Etiologies of motor speech disorders including neuromotor diseases, stroke, and trauma. (Lec. 3) Pre: admission to graduate program and 372 or equivalent. In alternate years. Next offered spring 1997. Staff

584 Language Disorders in Developmentally Young Children (1, 3) Study of communication deficits in developmentally young and multihandicapped children; types of language problems; differential diagnoses; assessment of conceptual requisites and concrete language skills; interactive therapeutic strategies. (Lec. 3) Pre: graduate standing or permission of instructor.

585 Aphasia and Allied Language Disorders (II, 3) Types of adult aphasia; central and peripheral dysarthrias; role of speech clinician on the rehabilitation team; other degenerative disorders such as Parkinsonism and dystonia; current research and controversial issues. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor. Staff

586 Alaryngeal Speech (1, 3) Voice and speech rehabilitation for individuals without a functional larynx; social, emotional, and medical considerations; clinical procedures for esophageal, pharyngeal, and buccal speech; implications for use of artificial larynx; current research. (Lec. 3) Pre: 372, 373, 374, 375, graduate standing, or permission of instructor. Staff

591 Contemporary Issues in Speech and Language Pathology (II, 3) Critical review of selected current research and controversial issues in the profession. Topics will vary each offering. (Sem. 3) Pre: minimum of 15 graduate credits in speech-language pathology, including 504, or permission of instructor. May be repeated for a maximum of 6 credits. Culatta and Staff

592 Stuttering and Cluttering (I, 3) Study of nature and causes of stuttering; analyses of current theories and research concerning stuttering and cluttering; development of a rationale for diagnosis, case selection, and intervention. (Lec. 3) Pre: graduate standing and/or permission of instructor. Staff

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Community Planning (CPL)

Director: Professor Feld

410 Fundamentals of Urban Planning (II, 3) Survey of urban planning principles, methods, and techniques pertinent to contemporary urban problems. History of city forms and functions and development of urban planning as a profession. Problems and priorities in shaping the future urban environment. (Lec. 3) Primarily for students not enrolled in the graduate curriculum in community planning and area development. Foster

434 (or MAF 434) Introduction to Environmental Law (II, 3) Surveys issues arising out of laws designed to protect the environment and manage resources: right to a decent environment, government regulation versus private property rights, citizen participation in planning environmental controls. (Lec. 3) Primarily for students not enrolled in the graduate curriculum in community planning and area development. Gordon

501 Introduction to Community Planning Practice (1, 3) The development of community planning in the United States, history of governmental planning and evaluation of the planning profession, and the elements of planning practice. (Lec. 3) Foster

510 Community Planning and Political and Social Change (II, 3) Introduction to systems and central theories of determinants for social and planned change in urban and urbanizing communities. Focus on methodologies for political and social assessments. (Sem. 3) Pre: 523 or permission of instructor. Feld

511 Planning and Natural Environmental Systems (1, 3) Introduction to theories, methodologies, and substantive concerns of environmental resource analysis with attention given to coastal environmental issues. Focus on land, soils, watersheds, water quality, vegetation, air quality, wildlife, noise pollution. (Lec. 3) Staff

512 Spatial and Fiscal Relationships of Communities (1, 3) The structure and functions of human settlements. Classical and contemporary urban theory. How urbanization and planning influence each other. Emphasizes urbanization as a historical process tied to other social processes. (Sem. 3) Feldman

516 Seminar on the Urban Waterfront See Marine Affairs 516.

522 Planning Law (I, 3) General review and discussion of legal principles and thought concerned with property rights, political power, and the legal aspects pertinent to the planning and development of public and private activities. (Lec. 3) Pre: second-year graduate standing or permission of instructor. Schatz

523 Planning Theory (1, 3) Critical survey of planning theories and contemporary planning concepts. Values, assumptions, and processes of various planning paradigms as related to decisions in community planning. Specific emphasis on values and ethics in planning theory. (Sem. 3) Feld

525 Introduction to Planning Methods (1, 3) Introduction to basic quantitative methods in community planning. Emphasis on analysis of demographic, economic, housing, and other basic planning data. Introduction to computer applications in planning. (Lec. 3, Lab. 1.5) Pre: STA 308 or permission of instructor. Feldman

526 Planning and Policy Analysis (II, 3) Social research methods for planning, with emphasis on master's thesis and applied research projects. Philosophy of science, research design, proposals, surveys, sampling, and data analysis for planning. Emphasis on computer methods. (Lec. 3. Lab. 1.5) Pre: 525 and one course in statistics. Feldman

530 Urban Design and Public Policy (II, 3) Significant concepts of historical and contemporary urban form ranging from entire cities to architectural details. Emphasis on urban design methods, process, and elements. Alternatives for implementation of urban design projects. (Lec. 3) Atash

536 International Comparisons in Urban and Regional Planning (1, 3) Urban and regional development issues and policies in advanced and developing countries. Emphasis on population growth, urbanization, and spatial development. (Sem. 3) In alternate years. Atash

537 (or REN 532) Land Resources Economics (1, 3) The study of economic relationships of man and scarce natural and man-made resources. Supply and demand, rent theory, resources conservation, and the impact of public policy and law. (Lec. 3) Wichelns

538 Site Planning (II, 3) Site analysis and planning, including street design, principles of house grouping, and residential subdivision layout. Site planning standards for office development and shopping centers. (Lec. 3) Atash

- 539 Environmental Law (II, 3) Analysis of specific environmental issues and policies including facility siting, land use and constitutional issues, comprehensive planning, public trust doctrine, concurrence and state impact assessments. Independent research and presentation required. (Lec. 3) Schatz
- 540 Community-Based Housing (1, 3) Analysis of local housing needs; issues and perspectives in the context of federal and nonfederal program activities. Review of public-purpose strategies to provide housing that meets community needs. (Sem. 3) Pre: graduate standing or permission of instructor. Jensen
- 541 Urban and Rural Housing Policy (II, 3) Assessment of urban and rural housing needs; relationship of housing to national economic policy; housing finance; production and cost characteristics; tax policy, filtering and neighborhood change; and housing policy assessments. (Sem. 3) Pre: 410 or 501 or permission of instructor. In alternate years. Feldman
- 542 Housing and Community Development Law (II, 3) Examination of housing and community development laws through cases and readings. Focuses on the laws and programs that have been developed to address the problem of providing affordable housing in the United States. (Sem. 3) Pre: graduate standing or permission of instructor. Bryant
- 543 Methods of Social Policy Analysis (II, 3) Methods and techniques of social public policy analysis as applied to social problems and the evaluation of policy options, programs, and quality of life. (Sem. 3) Pre: 624 or permission of instructor. In alternate years. Feld
- 545 Land Development Seminar (II, 3) A study of land management techniques including zoning, subdivision regulation, and land suitability and analysis; their use and environmental implications in land and water development. (Sem. 3) Pre: 511 or permission of instructor. Staff
- 546 (or CVE 546) Urban and Rural Transportation (1, 3) Issues confronting planning for urban and rural transportation systems; the variety of policies that governments pursue in addressing issues and problems; technical and political constraints, transportation studies, and demand analysis techniques. (Lec. 3) Pre: 410 or 501 or permission of instructor. In alternate years. Shaw and Lee
- 549 Seminar in Ecological Planning (1, 3) Advanced seminar in ecological planning. Topics include hazardous waste, power plant siting, major transportation facilities, solid waste, aqui-

- fer protection, among others. Particular emphasis on wetlands and marine and coastal settings. (Sem. 3) Pre: 511 or permission of instructor. Staff
- 555 Introduction to Economic Development Planning (II, 3) Overview of economic development planning theory and practice. Emphasis on state and local planning in industrialized countries. The planning process and analytical techniques. Business, human resource, and community development strategies. (Sem. 3) Pre: 512 or permission of instructor, In alternate vears. Feldman
- 589 Master's Project Research (I and/or II, 1-6) A substantial, self-directed planning project, by one or several students, under guidance of a major professor. Number of credits to be determined each semester. S/U credit. Staff
- 591, 592 Special Problems in Planning (1 or 11, 1-6 each) Individual investigation of special problems in planning. (Independent Study) Staff
- 593-596 Special Problems in Planning (1 or 11, 1-6 each) Group investigation of special problems in planning. (Independent Study) Staff
- 599 Master's Thesis Research (1 or II, 1-6) Number of credits is determined each semester in consultation with the major professor or program committee. S/U credit. Staff
- 624 Planning Policy and Management in Urban Areas (II, 3) City planning as applied to urban policy in cities and metropolitan areas. Includes social, economic, and physical planning in the context of community development programs and management processes. (Sem. 3) Pre: 501, 511, 525, or permission of instructor. Foster
- 625 Central City Revitalization and Implementation (1, 3) Advanced concentration course in central city planning. Focus on the problems of central cities and the causes of these problems. Emphasis on government policies to deal with the problems of the inner city. (Sem. 3) Pre: 624 or permission of instructor. Foster
- 630 Comprehensive Planning Studio (II, 6) Applied team problem solving. Planning experience working with specific client and/or community emphasizing sequential process and group product. Project to include problem definition, conceptual design analysis, and oral/ graphic presentations. (Studio 6) Pre: 501, 511, 523, 525, or permission of instructor. Foster
- 631 Advanced Planning Studio (1, 6) Team projects in planning and design; research and program development; field studies and prob-

- lem analysis in local and state contexts. Development and evaluation of alternative solutions. (Studio 6) Pre: 630 or permission of instructor. Atash
- 691, 692 Special Problems in Planning (I or II, 1-6 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Staff
- 693, 694 Special Problems (I or II, 1-6 each) Advanced work under the supervision of a staff member arranged to suit the requirements of a group of students. (Independent Study) Staff

Community Service (CSV)

Coordinator: Dean Strommer, University College

Note: The total number of credits in community service that may be earned toward graduation may not exceed 12.

- 301 Course-Based Community Service (1 or 11, 1-3) Learning through a community service experience related to course content. Experience defined by a job description and learning contract; includes orientation and reflection. (Practicum) Pre: junior standing or above, or permission of instructor. Concurrent enrollment in a course that offers community service experience. May be repeated for a maximum of 6 credits. S/U only. Staff
- 302 Community Service at URI (1 or 11, 2-4) Learning through a community service project that addresses a specific community need at the University of Rhode Island. Project proposed and supervised by an instructor, and varies each semester. Includes mandatory seminar. (Practicum) Pre: junior standing or above, or permission of instructor. May be repeated for a maximum of 8 credits. S/U only. Staff
- 303 Service in the Community (I or II, 2-4) Learning through a community service project that addresses a specific need in the off-campus community. Project proposed and supervised by an instructor, and varies each semester. (Practicum) Pre: junior standing or above, or permission of instructor. May be repeated for a maximum of 8 credits. S/U only. Staff

Comparative Literature Studies (CLS)

Coordinator: Professor Leo (English)

160 Masterpieces of Literature See English 160.

235 (or PHL 235) Modern Thought: Philosophy and Literature (I or II, 3) Introduction to recent thought in philosophy and literature. Emphasis on Kierkegaard, Marx, Nietzsche, Freud, Sartre, and complementary literary texts. (Lec. 3) Team-taught. Kuhn and Johnson (L)

250 Themes and Myths (I or II, 3) Study of the evolution and transformation of a myth or theme in several national literatures. An introduction to a comparative and interdisciplinary approach. (Lec. 3) May be repeated for credit as often as topic changes. May be taken once for General Education credit. Staff (A)

335 (or ENG 335) Interdisciplinary Studies in Comparative Literature (I or II, 3) Study of the interrelationships of two or more national literatures (in translation) with another discipline. (Lec. 3) May be repeated for credit as often as topic changes. Staff (A)

350 (or ENG 350) Literary Theory and Criticism (I or II, 3) Introduction to theories of literature and their application in the analysis of selected texts. (Lec. 3) May be repeated for credit as often as topic changes. Staff

450 Studies in Comparative Literature (1 or 11, 3) Detailed study of a literary movement, genre, or an aspect of literature as seen in two or more literatures. (Lec. 3) Pre: 6 credits in literature or permission of instructor. May be repeated for credit as often as topic changes. Staff

510 Introduction to Comparative Literature (I or II, 3) Theoretical and practical concerns of comparative literature: its nature and scope, methods, bibliography, and special problems. (Seminar) Pre: graduate standing or permission of chairperson. Viglionese

520 Literary Theory and Criticism (1 or 11, 3) Metacriticism: literary criticism as theory and practice and the relationship between literary and critical discourse. (Seminar) Pre: graduate standing or permission of chairperson. May be repeated once with change of topic. Staff

530 Approaches in Comparative Literature (I or II, 3) Study of theme/myth, movement/era, genre/forms in two or more literatures, or interrelations with other disciplines. (Seminar) Pre: graduate standing or permission of chairperson. May be repeated once with change of topic. Staff

597 Special Problems (I and II, 1-6) Group and/or individual investigation of special problems in comparative literature studies. (Independent Study) Staff

599 Master's Thesis Research (I and II, 1-6) Number of credits is determined each semester in consultation with the major professor and the Comparative Literature Studies Advisory Committee. (Independent Study) Staff

See other listings under English and Modern and Classical Languages and Literatures.

Computer Science (CSC)

Chairperson: Professor Lamagna

101 Computing Concepts (I or II, 3) Capabilities and limitations of computers. Applications of computers in today's society. Overview of computing systems and programs. Students will complete several projects using a computer. (Lec. 3) Not open to students who have credit in any college-level computer science course. Not open to computer science majors. Staff

110 The Analytical Engine (I, 3) How computers work. Design of a simple computer. Programming and languages; program translation. (Lec. 3) Open only to computer science majors with 4 or fewer credits in CSC courses. Staff

200 Introduction to Computer Programming for Engineers (I or II, 3) Computer programming in FORTRAN; application to engineering problems. VAX/VMS DCL; noninteractive computer graphics. Designed for engineering students. (Lec. 2, Rec. 1) Pre: credit or concurrent enrollment in MTH 141. Only one of 200, 201, or 211 may be taken for credit. Staff

201 Introduction to Computing (I and II, 3) Computer characteristics, algorithms, data representation, program development. Students will write several programs to solve numerical and nonnumerical problems. (Lec. 2, Rec. 1) Pre: MTH 111 or equivalent. Not for major credit in computer science. Only one of 200, 201, or 211 may be taken for credit. Staff (M)

205 Computational Methods for Engineers and Scientists (1, 3) Roots of equations and systems of equations, curve fitting, plotting, integration, errors. Students will write several programs to solve numerical problems. (Lec. 3) Pre: 200, 201 or 211, credit or concurrent enrollment in MTH 142. Not for major credit in computer science. Staff

211 Introduction to Computer Science I (I and II, 4) Algorithm development, programming and program structure, data representation, organization and characteristics of computers. Students will write several programs to solve numerical and nonnumerical problems. (Lec. 3, Lab. 2) Pre: prior experience with computers and

programming and MTH 111 or equivalent. Only one of 200, 201, or 211 may be taken for credit. Intended for computer science majors. Staff

212 Introduction to Computer Science II (I and II, 4) Fundamentals of software engineering including programming style, development, testing, maintenance, and evaluation. Structured data types. Data structures and their implementation. Principles of recursion. (Lec. 3, Lab. 2) Pre: 201 or 211 and MTH 141. Intended for computer science majors. Staff

301 Fundamentals of Programming Languages (1, 3) Syntactic and semantic issues in programming languages. Topics include scanners, recursive descent parsers, interpreters, direct and continuation semantics, run-time structures, and data abstraction. Several significant programming exercises. (Lec. 3) Pre: 212. Staff

311 Machine and Assembly Language Programming (II, 3) Introduction to machine and assembly language programming for a particular computer. Instruction definitions, machine representations of data and instructions, programming techniques. Computer solution to several numerical and nonnumerical problems. (Lec. 3) Pre: 212. Staff

312 Advanced Assembly Language Programming (1, 3) Continuation of 311. Subprograms, macro-level input and output, decimal and floating-point representations, conversions between data representations, macro definitions. (Lec. 3) Pre: 311. In alternate years. Next offered fall 1996. Staff

320 Social Issues in Computing (I, 3) Discussion of the social and ethical issues created by the use of computers. The problems that computers solve and those that they produce. Ethics and responsibilities of the computer professional. (Lec. 3) Pre: 212, junior standing, or permission of instructor. In alternate years. Next offered fall 1995, Staff

331 Data Structures (I, 3) Implementation and manipulation of lists, trees, graphs, arrays, and other data structures. Searching and sorting methods. File structures and data management. Data structures in programming languages. (Lec. 3) Pre: 212 and 340 or 447. Staff

340 Applied Combinatorics (II, 3) Combinatorial techniques used in nonnumerical computation and analysis of algorithms. Topics include enumeration, recurrence relations, graphs and networks. Complexity analysis of several representative problems and algorithms for their solutions. (Lec. 3) Pre: 212 and credit or concurrent enrollment in MTH 215. Staff

- 402 Compiler Design (1, 3) Grammars and languages; lexical analysis, parsing and translation, symbol tables, run-time storage administration, object code generation. Students will construct a compiler for a small programming language. (Lec. 3) Pre: 301 and 331. Staff
- 406 Computer Graphics (II, 3) Interactive raster graphics; hardware, software, and algorithms. Point plotting, line drawing, geometrical transformations, clipping and windowing. Threedimensional graphics including curves, surfaces, perspective, hidden objects, shading. User interfaces; graphical programming environments. (Lec. 2, Lab. 2) Pre: 331 and MTH 215 and 243. In alternate years. Next offered spring 1997. Staff
- 411 Computer Organization (1, 3) Logical structure of computer systems viewed as a hierarchy of levels. Topics include digital logic, microprogramming, processor organization, addressing techniques, instruction sets, virtual memory, assemblers, linkers, and loaders. (Lec. 3) Pre: 311. Staff
- 412 Operating Systems (II, 3) Presentation of the general concepts underlying operating systems. Topics include process management, concurrency, scheduling, memory management, information management, protection and security, modeling and performance. (Lec. 3) Pre: 311 and 331. Staff
- 420 Software Engineering (II, 3) Programming environments and methodologies for the design, development, testing, and maintenance of large software systems. Students will participate in an extensive software development project. (Lec. 3) Pre: 301 and 331. In alternate years. Next offered spring 1996. Staff
- 436 Database Management Systems (1, 3) Concepts and theory of structuring and managing large data systems; semantic modeling; relational, hierarchical, and network approaches to database organization; concurrency control; distributed systems; security and integrity. (Lec. 3) Pre: 331. Staff
- 440 Design and Analysis of Algorithms I (1, 3) Algorithm design and analysis techniques; inherent computational complexity. Fast algorithms for sorting and searching, string pattern matching, polynomial and matrix calculations, properties of graphs and networks. NP-completeness and intractability. (Lec. 3) Pre: 331.
- 445 Formal Languages and Automata Theory (II, 3) Abstract models of computation; deterministic and nondeterministic machines. Grammars and formal languages. Finite state ma-

- chines and regular expressions; pushdown automata and context-free languages; Turing machines. Effective computability and unsolvable problems. (Lec. 3) Pre: 340. In alternate years. Next offered spring 1997. Staff
- 447 Discrete Mathematical Structures See Mathematics 447.
- 450 Fundamentals of Numerical Computation (II, 3) Finite precision arithmetic, errors and pitfalls in computations, recursive and iterative processes, built-in functions, using available software. Survey of classical algorithms with emphasis on application, use, and interpretation of results. (Lec. 3) Pre: 212 and MTH 215 and 243.
- 481 Artificial Intelligence (II, 3) Theories, formalisms, techniques to emulate intelligent behavior using information processing models. Symbol programming, search, problem solving, knowledge-based techniques, logic, theorem proving. Optional topics: natural language processing, machine learning, computer vision. (Lec. 3) Pre: 301 and 331 or permission of instructor. In alternate years. Next offered spring 1997.
- 491 Directed Study in Computer Science (I and II, 1-3) Advanced work in computer science. Conducted as supervised individual projects. (Independent Study) Pre: permission of chairperson. S/U credit. Staff
- 492 Special Topics in Computer Science (I or II, 3) Advanced topics of current interest in computer science. (Lec. 3) Pre: permission of instructor. Staff
- 501 Programming Language Semantics (1, 3) Design, analysis, implementation, and comparative study of major programming language families. Topics include procedural and blockstructured languages, interpretive languages, concurrency, functional languages, objectoriented programming, logic programming, dataflow languages and machines. (Lec. 3) Pre: 301 and 311. Staff
- 502 Theory of Compilers (II, 3) An advanced course in compiler construction covering advanced parsing techniques, compiler-writing tools, type checking and type inference, code optimization, and compiling nonstandard lanquage features. (Lec. 3) Pre: 402. In alternate years. Next offered spring 1997. Staff
- 511 Advanced Computer Organization (1, 3) Evaluation of high-performance computer systems with respect to architectures, operating systems, and algorithms. High-speed conven-

- tional machines; array processors; multiprocessors; data flow machines; RISC architectures; VLSI-based machines. (Lec. 3) Pre: 411. In alternate years. Next offered fall 1995. Staff
- 512 Topics in Operating Systems (II, 3) Indepth studies of topics chosen from the following list: concurrent programming, computer systems performance, and distributed systems. (Lec. 3) Pre: 412. In alternate years, Next offered spring 1996. Staff
- 517 Design and Analysis of VLSI Systems (1, 3) Illustration and analysis of VLSI algorithms and architecture. Emphasis on design of very largescale integrated circuits, related methodologies, and theoretical foundations. VLSI technologies, fabrication, automated design tools for various problems. (Lec. 3) Pre: 411 and either 340 or 447. In alternate years. Next offered fall 1996. Staff
- 525 (or IME 525) Simulation (II, 3) Discrete simulation models. Comparison of discrete change simulation languages. Methodology including generation of random variates, design of simulation experiments for optimization and validation of models and results. Selected applications, (Lec. 3) Pre: 212 and 6 credits of statistics. Staff
- 536 Topics in Data Management Systems (I or II, 3) Current research and developments in database management systems. Relational, semantic, object-oriented, real-time, distributed, heterogeneous, and logic databases. Concurrency control, security, active rules, recovery, and integrity subsystems. (Lec. 3) Pre: 436 or permission of instructor. Staff
- 541 Design and Analysis of Algorithms II (II, 3) Advanced topics in the design and analysis of algorithms including combinatorial optimization and graph algorithms; computational geometry; primality and factoring, public-key cryptography; minimal comparison sorting; size and delay in switching circuits. (Lec. 3) Pre: 440. In alternate years. Next offered spring 1996. Staff
- 542 Mathematical Analysis of Algorithms (l, 3) Mathematical techniques for the analysis of algorithms. Sums and products; finite difference calculus; properties of binomial coefficients; Stirling, harmonic, and Fibonacci numbers; recurrence relations; generating functions; asymptotic approximation. Case studies. (Lec. 3) Pre: 440. In alternate years. Next offered fall 1996.
- 544 Theory of Computation (I, 3) Automata and formal languages; undecidability; time and

space complexity classes and relations between them; hierarchy and gap theorems; Savitch's theorem; alternating Turing machines; the complexity class NC. (Lec. 3) Pre: 340 or 447. In alternate years. Next offered fall 1995. Staff

547 Combinatorics and Graph Theory See Mathematics 547.

548 Topics in Combinatorics See Mathematics 548.

550 Advanced Numerical Computation (II, 3) Design of efficient numerical algorithms under various models of computation. Topics include polynomial and integer computations, computational linear algebra with applications to combinatorial optimization, lower bounds. (Lec. 3) Pre: 450. Staff

581 (or ELE 581) Special Topics in Artificial Intelligence (II, 3) Topics of specialized or current interest, which may change. Topics may include expert systems, natural language processing, neural network models, machine learning. Al applications in remote sensing. (Lec. 3) Pre: 481 or permission of instructor. May be repeated with permission. In alternate years. Next offered spring 1996. Staff

583 Computer Vision See Electrical Engineering 583.

591 Directed Study in Computer Science (/ and II, 1-3) Advanced work in computer science conducted as supervised individual projects. (Independent Study) Pre: permission of chairperson. S/U credit. Staff

592 Special Topics in Computer Science (I or II, 3) Advanced topics of current interest in computer science. (Lec. 3) Pre: permission of chairperson. Staff

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Consumer Studies (CNS)

210 Management in Family Living (I and II, 3) Interaction of resources, goals, and managerial processes in the home seen in the context of the larger community. Applications primarily in the area of human resources. (Lec. 3) Pre: sophomore standing or permission of chairperson. Noring

220 Consumer in the Economy (I and II, 3) Application of basic economic principles to consumer problems in a complex marketplace, buyer-seller relationships, effective consumer decision making, effects of government policies on consumers. (Lec. 3) Pre: economics course. Anderson (S)

320 Personal Finance (I and II, 3) Personal financial planning and decisions for attaining individual and family goals. Factors that affect, protect, and enhance financial security. (Lec. 3) Pre: junior standing. Anderson

321 Personal Finance Applications (II, 3) Application of principles of family financial planning and decision making. Emphasis on mathematical and analytical evaluation and analysis including the use of computer software. (Lec. 3) Pre: 320. Xiao

340 Family Housing (1, 3) Evaluation and study of types of housing in relation to the family and community. Emphasis on socioeconomic factors, housing laws, and aesthetic qualities concerned with housing. (Lec. 3) Noring

342 Housing for the Elderly (II, 3) Aspects of housing and nearby environmental conditions and needs, alternatives, legislative programs and support services related to housing for the elderly. (Lec. 3) Pre: HDF 220 or permission of instructor. Noring

350 Consumer Purchasing of Durable Goods (II, 3) Decision making concerning selection of consumer durables relative to feature availability, resource depletion, and natural energy use. (Lec. 3) Noring

401 Consumer and Managerial Problems of Families with Special Needs (II, 3) Seminar to develop strategies for assisting families with unusual demands for consumer and managerial skills. Attention to such groups as unemployed, marginally employed, minorities, handicapped, elderly, and female-headed households. (Lec. 3) Pre: a CNS course or an HSS course or HDF 330 or permission of instructor. Staff

415 Retirement Planning (II, 3) Explanation and evaluation of financial information needed for effective retirement planning, including defining goals, estimating expenses, and analyzing resources. Pre: 320. Not for graduate credit. Anderson

420 Consumer Protection (I and II, 3) Effectiveness of diverse approaches to consumer protection. Analysis of techniques such as information disclosure, standards for products and services,

government and private agencies, redress channels, and legislation. (Lec. 3) Pre: 220 or 320 or permission of instructor. Xiao

422 Consumer Issues Research (I and II, 3) Critical examination of issues and policies on behalf of consumer welfare; documentation and investigation skills; writing and oral presentation skills. (Lec. 3) Pre: 220 or 320 or permission of instructor, Xiao

440 Housing Management (1, 3) Operation and management of residential properties: resident selection, services, legal and financial considerations, promotion of property, staffing, maintenance concerns, and safety and security. (Lec. 3) Pre: 340. Not for graduate credit. Noring

457 (or HLT 457) Health and Safety Issues of Consumer Products (I or II, 3) An interdisciplinary approach to solving health and safety problems arising from the use of complex consumer products. Emphasis on measurement systems, product liability, and product design. (Lec. 3) Pre: senior standing with 6 credits completed in health, consumer affairs, or other upper-level professional requirements or permission of instructor.

470 Special Problems (I and II, 2-4) Special problems selected from home management theory, consumption economics, work simplification, and equipment depending upon the specific interests of students. (Independent Study) Staff

477, 478 Field Experience in Consumer Affairs (I and II, 3 each) Approved, supervised work experience related to consumer well-being. Examples include research, advocacy, education, and dissemination of information, or provision of service. (Practicum) Pre: junior standing or permission of instructor. S/U credit. Not for graduate credit. Staff

Dental Hygiene (DHY)

Director: Associate Professor B. Brown

100 Introduction to Dental Hygiene (II, 1) An overview of the dental hygiene profession including basic dental anatomy, dental terminology, current infection control protocols, and preventive dentistry concepts. (Lec. 1) Brown

101 Preclinical Dental Hygiene (1, 1) Philosophies, concepts, and procedures needed before beginning experience in dental hygiene clinic. Emphasis on the basic concepts and principles in preventive oral health care. (Lec. 1) For dental hygiene majors only. Brown

- 125 Dental Morphology, Head and Neck Anatomy (1, 4) Study of form and function of teeth and their related structures. A detailed study of the anatomy and physiology of the structures of the head and neck. (Lec. 3, Lab. 3) For dental hygiene majors only. Kaufman, Woodward, and Brown
- 126 General and Oral Histology and Embryology (II, 3) Cytology, development and microscopic anatomy of oral cavity. (Lec. 3) Pre: 125. For dental hygiene majors only, Bhattacharya
- 128 Periodontics (II, 2) Classification of periodontal disease, clinical picture, causative factors, and types of treatment. (Lec. 2) For dental hygiene majors only. Nager
- 135 Technique: Clinical Dental Hygiene I (l, 3) An introduction to knowledge and skills essential for the performance of dental hygiene services. Emphasis on principles of instrumentation and perfecting clinical competence on manikin heads and laboratory partners. (Lec. 1, Lab. 6) For dental hygiene majors only. Staff
- 136 Clinical Dental Hygiene II (II, 3) Development of clinical skills. Application of the basic principles of oral inspection, charting, radiology, fluoride application, and dental health education. (Lec. 1, Practicum 8) For dental hygiene majors only. Staff
- 141 Dental Specialties (1, 2) Lectures, clinical observations, field trips, and practice devoted to the understanding and interaction of dental specialties. (Lec. 2) For dental hygiene majors only, Staff, Regional Dental Center, Newport
- 227 General and Oral Pathology (1, 3) Significance, signs, symptoms, and relationship of general disease to oral disease. Stress on manifestation of oral pathology and clinical recognition of atypical or abnormal oral conditions and disease. (Lec. 3) For dental hygiene majors only. Aschaffenberg
- 231 Roentgenology (1, 2) Lectures, demonstrations, and laboratory practice. Study of nature and behavior of X-rays, extra- and intra-oral radiographic techniques and procedures. Recognition and interpretation of information revealed by radiographic examination. (Lec. 1, Lab. 2) For dental hygiene majors only. Brown and Staff
- 237 Clinical Dental Hygiene III (1, 4) Continuation of 136. (Lec. 1, Practicum 12) For dental hygiene majors only. Staff
- 238 Clinical Dental Hygiene IV (II, 4) Continuation of 237. (Lec. 1, Practicum 12) For dental hygiene majors only. Staff

- 244 Dental Materials and Operative Technique (1, 2) Study of physical, chemical, and mechanical properties of materials used in dentistry. Laboratory procedures develop skill in preparation, manipulation, and use of materials relevant to the practice of dental hygiene. (Lec. 1, Lab. 3 for 10 weeks) For dental hygiene majors only. Renz
- 248 Legal and Ethical Responsibilities in Dental Practice Management (II, 2) Ethics and legal responsibilities relating to the practice of dental hygiene and dentistry. Emphasis on principles of practice management in private practice and in the specialty areas. (Lec. 2) For dental hygiene majors only. Staff
- 252 Community Health (II, 3) Philosophy and background of public health practice. Review of current health concepts, practice, needs, and problems. Emphasis on methods for promotion of optimal health for all. Supervised field experiences. (Lec. 3) For dental hygiene majors only.
- 350 Dental Health Education (II, 3) Educational philosophy, teaching methods, and acquisition of skills in methods of research. Investigation, review, interpretation, and critical evaluation of scientific literature as the basis for dental health education. (Lec. 3) For dental hygiene majors only. Brown
- 440 (or CMD 440 or PHT 440) Advanced Head and Neck Anatomy (II, 3) Study of structure and function of human head and neck anatomy, supplemented by dissection laboratory. Emphasis on the musculoskeletal, visceral, nervous, and vascular systems related to dental hygiene and communicative disorders. (Lec. 2, Lab. 2) Pre: ZOO 121 or equivalent. Agostinucci
- 462 Oral Care of the Aged and Medically Compromised (1, 3) Practical approach for the health-related professional. Emphasis on recognition of oral disorders, oral health care strategies, and principles of prevention for the aged and chronically ill. (Lec. / Practicum 3) Pre: ZOO 242 and HDF 220 or permission of instructor. For dental hygiene majors only. Saunders
- 464 Field Experience in Community Oral Health (II, 3) Directed field experience in dental health education in cooperation with community-based agencies. Weekly seminar. The experience will be defined by a job description and learning contract or letter of intent arranged by the instructor with the student and the agency supervisor. (Practicum) Pre: 252 or permission of instructor. For dental hygiene majors only. Brown

Economics (ECN)

Chairperson: Professor H. Barnett

- 100 Introduction to Economics (1 and II, 3) General overview of concepts economists employ to address issues of public policy. Description of major institutions of present-day American economy. Historical approach to subject matter. (Lec. 3) Staff (S)
- 201 Principles of Economics: Microeconomics (1 and II, 3) Principles underlying resource allocation, production, and income distribution in a market economy. Topics include demand and supply, consumer behavior, firm behavior, market structure, and elementary welfare analysis. Institutional foundations explored. (Lec. 3) Staff (S)
- 202 Principles of Economics: Macroeconomics (1 and II. 3) Principles underlying aggregate demand and aggregate supply in a market economy. Topics include national income determination, inflation, unemployment, economic growth, and international trade. Institutional foundations explored, (Lec. 3) Pre: 201 or equivalent, Staff (S)
- 305 Competing Traditions in Economics (I and II, 3) Introductory exposure to the history of economic thought and also to competing schools of thought within modern economics. Connections between present-day controversies and competing traditions are explored. Pre: 201, 202. May be taken concurrently with 202. Ramstad
- 306 Introduction to Economic Research Methods (I and II, 3) Development of supplementary skills needed to carry out economic research. Topics include: 1) widely used computer operating systems, 2) economic data sources, 3) elementary mathematical and statistical techniques, and 4) library research methods. Pre: 201, 202. May be taken concurrently with 202. Mead or Ramsay
- 323 Intermediate Microeconomics (1, 3) Theory of consumer behavior, the firm, market equilibrium, general equilibrium, imperfect competition, optimization over time, and linear models. Models of microeconomics are developed using calculus and linear algebra. (Lec. 3) Pre: 201, 202 and MTH 131 or 141. Miller
- 324 Intermediate Macroeconomics (II, 3) Theory of consumption, investment, monetary and fiscal policy, static and dynamic models, economic growth, unemployment, and inflation. Macroeconomics developed using calculus

- and linear algebra. (Lec. 3) Pre: 201, 202 and MTH 131 or 141. Lardaro
- 327 Intermediate Economic Theory: Income and Employment (I or II, 3) Measurement of national income. Theory of the determination of the general level of income, employment, and prices. Business fluctuations. (Lec. 3) Pre: 201 or 202 or 590 or permission of instructor. Staff
- 328 Intermediate Economic Theory: Pricing and Distribution (1 or II, 3) Market conditions and forces affecting the pricing and production of goods and services, the allocation of resources, and the distribution of income. (Lec. 3) Pre: 201 or permission of instructor. Staff
- 334 Money and Banking (II, 3) Structure and functioning of monetary institutions. Analyses of monetary theories. The role of monetary policy. U.S. banking structure: its operations and functioning. (Lec. 3) Pre: 201 or permission of instructor. Barnett
- 337 Business and Government (I or II, 3) Historical and present attitudes and policies of various levels of government toward the changing structure of American business. Emphasis on legal and economic concepts of business activity. (Lec. 3) Pre: 201 or 202 or permission of instructor. Ramsay
- 338 International Economics (I or II, 3) Theory and evidence on international trade and finance. Includes determinants and welfare effects of foreign trade, international investment, migration, exchange rates, and the balance of payments. (Lec. 3) Pre: 202 or permission of instructor. Burkett
- 342 Public Finance (II, 3) Examination of the theory and practice of public expenditures, revenues, and fiscal policy with major emphasis on federal fiscal affairs. (Lec. 3) Pre: 201 or 202 or permission of instructor. Starkey
- 344 (or PSC 344) International Financial Economics (II, 3) History, theory, and politics of the international financial system. Topics include the foreign exchange market, international banking, macroeconomic stabilization under fixed and floating exchange rates, exchange rate reform, and the global debt crisis. (Lec. 3) McIntyre
- 351, 352 Assigned Work (I and II, 3 each) Special work in economics when it can be arranged to meet the needs of individual students who desire independent work. (Independent Study) Pre: 201 or 202 or permission of instructor. S/U credit. Barnett

- 363 Economic Growth and Development (I or II, 3) Basic problems in economic growth and development of so-called backward or preindustrial countries. Emphasis on population trends, agrarian reforms, capital formation, international aid programs, respective roles of private and public enterprise. (Lec. 3) Pre: 201 or 202 or permission of instructor. Sharif
- 368 (301) Labor Economics (I or II, 3) Impact of industrialization on workers; survey of the basic principles of labor market organization and operation; unemployment and remedies; wage determination under union and nonunion conditions. (Lec. 3) Pre: 201 and 202. Miller
- 375 Introduction to Quantitative Methods I (1, 3) Mathematical techniques used in modern economic theory. Linear algebra, the calculus of several variables, constrained maximization, and differential equations. Application to economic problems. (Lec. 3) Pre: 201 and 202 and MTH 141, or permission of instructor. Miller
- 376 Introduction to Econometrics (1, 4) Application of econometric methods to economic problems. Econometric tools applied to microand macroeconomic problems. (Lec. 3, Lab. 2) Pre: 201 or permission of instructor. Lardaro
- 381 (300) Radical Critiques of Contemporary Political Economy (II, 3) Radical right and radical left critiques. Radical views on values, methodology, production planning, income distribution, economic power, the military-industrial complex, imperialism, and racial and sexual discrimination. (Lec. 3) Pre: 202 or permission of instructor. Staff (S)
- 385 (302) Economic Development of the United States (I or II, 3) Developmental factors in American economic life introduce students to the past and present business environment. (Lec. 3) Pre: 201 or permission of chairperson. Ramstad
- 402 Urban Economics (I or II, 3) Analysis of selected economic problems of urban areas. Development of methodological approaches through discussion of policy issues. (Lec. 3) Pre: 201 or 202 or permission of instructor. Mead
- 403 Corporate Crime and Government Regulation (1, 3) Analysis of illegal corporate activity and the problems of social control through law and enforcement. Emphasis on the regulatory process and the impact of regulation and deregulation on the concentration of capital and on health, safety, and the environment. (Lec. 3) Barnett

- 404 Political Economy of Class, Race, and Gender (1, 3) Theoretical and empirical analysis of class, race, and gender differentials in income and wealth within the framework of structural versus individual characteristics. Special attention paid to economic development, labor markets, the educational system, and the state. (Lec. 3) Pre: 201 or permission of instructor. Starkey
- 444 Applied Research in Economics (II, 3) The application of economic theory, econometrics, and computing to specific problems. Emphasis on formulation of hypotheses in mathematical form, transformation into forms suitable for empirical testing, testing using the computer, report writing, and oral presentation. (Lec. 3) Pre: 323, 324, and 376, Staff
- 445 Senior Research Project (I and II, 3) Collaborative group research under guidance of department member. Topic jointly selected by members of group, subject to faculty approval. Written report required. (Independent Study) Pre: final semester for majors in the economics B.A. program. Not for graduate credit. Staff
- 512 History of Economic Analysis (1, 3) Advanced work on formative developments in economic thought from classical political economy to modern welfare economics. Emphasis on relationships between doctrines and their institutional setting. (Lec. 3) Pre: permission of instructor, Ramstad
- 515, 516 Economic Research (I and II, 1-3 each) Independent research. (Independent Study) S/U credit. Staff
- 526 Economics of Labor Markets See Labor and Industrial Relations 526.
- 527 Macroeconomic Theory (II, 3) Static and dynamic models of aggregate economic behavior developed and analyzed. (Lec. 3) Pre: 327 and 375 or equivalent, or permission of instructor. Mead
- 528 Microeconomic Theory See Resource Economics 528.
- 534 Information Sources and Uses in Labor **Relations and Labor Economics** See Labor and Industrial Relations 534.
- 538 International Economics (I or II, B) Theory and evidence on international trade and finance. Includes determinants and welfare effects of foreign trade, international investment, migration, exchange rates, and the balance of payments. (Lec. 3) Pre: 327 and 328 or permission of instructor. Burkett

544 International Financial Economics (II. 3) History, theory, and politics of the international financial system. Topics include the foreign exchange market, international banking, macroeconomic stabilization under fixed and floating exchange rates, exchange rate reform, and the global debt crisis. (Lec. 3) Pre: 327. McIntyre

552 Monetary Theory and Policy (II, 3) Analysis of structure and functioning of monetary and banking systems; discussion of contemporary monetary theories; evaluation of monetary policies. (Lec. 3) Pre: 334 or permission of instructor. Barnett

566 Economic Planning and Public Policy in Developing Nations (II, 3) Resource and financial planning in public and private sectors of developing nations with emphasis on planning tools, allocation of domestic and foreign resources, and national economic policies. (Lec. 3) Pre: 327 and 363 or 464, or equivalent, or permission of instructor. Sharif

575 Introduction to Mathematical Economics (1, 3) Application of basic quantitative methods to economic analysis. Dynamic and static economic models will be studied with emphasis on obtaining solutions. (Lec. 3) Pre: 327, 328, and MTH 141 or permission of instructor. Miller

576 (or REN 576 or STA 576) Econometrics (1, 4) Application of statistics and mathematics to economic analysis. Implication of assumption required by statistical methods for testing economic hypotheses. Current econometric methods examined and discussed. (Lec. 3, Lab. 2) Pre: 575 or equivalent, STA 308 or equivalent, or permission of instructor. Tyrrell

590 Principles of Economics (I and II, 3) Survey of micro- and macroeconomic theory. (Lec. 3) Pre: graduate standing in accounting, labor and industrial relations, or M.B.A. program. Lardaro

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

628 Advanced Microeconomic Theory See Resource Economics 628.

676 Advanced Econometrics see Resource Economics 676.

Education (EDC)

Chairperson: Professor Kellogg

102 Introduction to American Education (I and II, 3) Introduction to the fundamental structure, functions, and problems of American education. Emphasis on education as both a sociocultural phenomenon and an embodiment of philosophical commitments. (Lec. 2, Rec. 1) Not for major credit in elementary or secondary education. Staff (S)

250 Supervised Preprofessional Field Experience (I or II, 1) Supervised early field experience and seminar for students wishing to explore one or more possible career choices in education. (Practicum) Pre: permission of chairperson. May be repeated for credit. S/U only. Staff

279 Career Development Seminar (1 and II, 1) Individualized approach to career concerns, skill identification, self-awareness, career development theory, decision making. Emphasis on understanding long- and short-term goals. (Seminar) Staff

302 Topics in Educational Studies (1 and 11, 3) Consideration of basic purposes, values, and changes in American education as a means of analyzing selected topics drawn from foundational studies in education. Topics vary. (Lec. 3) Pre: sophomore standing or permission of instructor. Staff

312 The Psychology of Learning (1 and 11, 3) An analysis of learning with emphasis on principles and procedures applicable to any human teaching and learning situation. (Lec. 3) Pre: PSY 113. Staff (S)

329 Music for the Elementary School Teacher See Music 329.

350 Primary School Practicum (II, 1) Students apply methodology in a public school setting for grades K-2 for three hours each week for 10 weeks. Lessons are taught and principles of classroom management, individualized instruction, and integrated curriculum are applied. (Practicum) Pre: HDF 150, 200, and acceptance into the early childhood education program. Trostle and Staff

360 Foundations of American Education (I or II, 3) An analysis of historical, social, and philosophical foundations of American education, emphasizing theory and practice in contemporary schools and the relevance and appropriateness of the educational values schools reflect. (Lec. 3) Pre: open to students admitted to concentrations in elementary or secondary education. Students must be accepted into the education program. Russo and Willis

371 Educational Measurements (I and II, 3) An analysis of concepts and procedures involved in creating, selecting, summarizing, and using tests and other measurement devices in educational settings. (Lec. 3) Pre: 312. Staff

401 Development and Utilization of Instructional Materials (I and II, 3) Methods of developing and making classroom application of selected materials: nonprojected, projected, and audio. Specific attention to utilization in the social sciences, English, reading, the natural sciences, the humanities, anthmetic, and mathematics. (Lec. 1, Lab. 4) Pre: senior standing and 6 hours of education. Howard

402 The Education of Special Needs Students (I and II, 3) Legislative, judicial, social, and psychological issues related to the assessment, identification, and remediation of special needs students' problems in the regular and special education classroom. (Lec. 3) Pre: PSY 232 or HDF 200 and FDC 312. Staff

415 (515) Adolescents and Classroom Management (I and II, 3) issues pertaining to adolescent development as manifested in the classroom. Emphasis upon classroom management strategies for the learning and developmental needs of adolescents. (Lec. 3) Pre: in- or preservice major in secondary education or permission of instructor. Purnell

424 Teaching of Reading (I and II, 3) Philosophy, materials, and methods underlying the teaching of reading with special emphasis on developing understanding. (Lec. 3) Pre: 312 or graduate standing. Staff

425 The Use of Trade Books in the Reading Program (1, 3) Understanding and using children's literature as an extension of elementary school textbooks with emphasis on broadening the classroom teacher's instructional philosophy. (Lec. 3) Staff

426 Methods and Materials in Primary School Teaching (II, 3) Principles and practices of developing knowledge and skills in social studies, math, science, music, art, physical education, and language arts for grades pre-one, one, and two. (Lec. 3) Pre: HDF 301. Open only to elementary education early childhood option majors. Not for graduate credit in education. Trostle

427 Methods and Materials in Elementary Teaching I (I and II, 3) Language arts and reading principles and practices of guiding children in skillful use of basic means of communication (speaking, listening, writing, and reading). (Lec. 3) Pre: PSY 113 and 232, EDC 312, concurrent enrollment in EDC 428, and permission of chairperson. Open only to elementary education majors. Not for graduate credit in education. Staff

428 Methods and Materials in Elementary Teaching II (I and II, 3) Principles and practices of developing skills and knowledge in social

studies, math, and science with elementary school children. (Lec. 3) Pre: PSY 113 and 232, EDC 312, concurrent enrollment in EDC 427, and permission of chairperson. Open only to elementary education majors. Not for graduate credit in education. Staff

- 429 Emergent Literacy (II, 1) History and foundations of beginning reading, writing, and language development, and contemporary and practical applications of literacy activities, including language experience projects and storytelling. Focuses on the young child from birth to five years. (Lec. 1) Pre: credit or concurrent enrollment in 424. Not for graduate credit. Trostle and Staff
- 430 Methods and Materials in Secondary Teaching (I and II, 3) Principles of education and human sciences as related to curricular materials and classroom situations. Sectioned by academic major: business, English, mathematics, modern language, science, social studies. (Lec. 3) Pre: 102, 312, PSY 232, senior standing, and permission of instructor. Concurrent enrollment in 250 required. Open only to secondary education majors. Second semester only for students in the College of Business Administration. Not for graduate credit in education. Staff
- 435 The Teaching of Composition See Writing 435.
- 444 Teaching of Agribusiness and Natural Resources (1, 3) Organization of instructional programs; development of resource units, teaching plans, methods, techniques, and occupational experience programs. (Lec. 3) Pre: 102 and 312. Not for graduate credit in education. McCreight
- 448 Reading in the Content Areas (1, 3) Emphasis on the development of specialized vocabulary, textbook reading techniques, and other study skills needed to read math, science, social studies, business, and other content area materials. (Lec. 3) Pre: 312 or permission of chairperson. Staff
- 449 Teaching Adolescent Literature (1, 3) The current canon of adolescent literature will be reviewed and expanded, and methodologies for literature instruction will be explored. (Lec. 3) Pre: acceptance into the English education program or permission of instructor. Not open to students who have taken LSC 531. Barton
- 452 Evaluation of Elementary Students (1, 2) Purposes and means of evaluating elementary school children will be critically analyzed. Types of tests and measurement tools will be examined, such as observation checklists, sociograms,

- rating scales, and portfolios. (Seminar) Pre: acceptance into the elementary education program or permission of chairperson. Not for graduate credit. Staff
- 453 Individual Differences (1, 3) Analyzing the needs of various student populations with attention given to the concomitant values, resources, and curriculum modifications necessary for success in learning. (Lec. 3) Pre: acceptance in the elementary education program or permission of chairperson. Not for graduate credit. Staff
- 454 Individual Differences Field Component (1, 1) Supervised field experience related to 453 consisting of special education, language minority, compensatory education, gifted and talented, and at-risk students. (Practicum) Pre: acceptance into the elementary education program or permission of chairperson. Not for graduate credit. Staff
- 455 Language Arts Methods in Elementary Teaching (II, 2) Language arts and reading principles and practices of guiding children in the skillful use of basic means of communication (speaking, listening, writing, and reading). (Lec. 2) Pre: acceptance into the elementary education program or permission of chairperson. Not for graduate credit. Staff
- 456 Mathematics Methods in Elementary Teaching (II, 2) Principles and practices of developing knowledge and skills in mathematics with elementary school children. (Lec. 2) Pre: acceptance into the elementary education program or permission of chairperson. Not for graduate credit. Young and Staff
- 457 Science Methods in Elementary Teaching (II, 2) Principles and practices of developing knowledge and skills in science with elementary school children. (Lec. 2) Pre: acceptance into the elementary education program or permission of chairperson. Not for graduate credit. Young and
- 458 Social Studies Methods in Elementary Teaching (II, 2) Principles and practices of developing knowledge and skills in social studies with elementary school children. (Lec. 2) Pre: acceptonce into the elementary education program or permission of chairperson. Not for graduate credit. Staff
- 459 Supervised Methods Practicum (II, 2) Supervised field experience related to evaluation of elementary students and methods courses: language arts, social studies, mathematics, and science. Students will observe and teach. (Practicum) Pre: concurrent enrollment in 455.

- 456, 457, and 458. Not for graduate credit. Young and Staff
- 460 Post Student Teaching Seminar (1, 1) Consideration of curricular, social, political, and cultural issues in education based on reflection of the student teaching experience. (Seminar) Pre: concurrent enrollment in 484. Not for graduate credit. Staff
- 470 Advanced Methods in Elementary Mathematics (II, 3) Advanced study of elementary mathematics topics and methods. Math activities that promote understanding in the elementary student in areas such as geometry, number theory, and probability/statistics. Emphasizes utilization of NCTM Mathematics Standards. (Lec. 3) Pre: 484 or permission of instructor. Young or Long
- 478, 479 Problems in Education (1 and II, 0-3 each) Advanced work in education conducted as seminars, supervised individual projects, or supervised field experiences. (Independent Study) Students in seminars and supervised individual projects will be graded using standard grades (A-F); students in supervised field experiences will be graded using S/U grades only.
- 484 Supervised Student Teaching (I and II) Under selected and approved critic teachers, students participate in classroom teaching and other school activities for a period determined by credit to be earned. Areas include: secondary nonvocational, S/U credit; elementary education, S/U credit; home economics, S/U credit; resource development; business; music; theatre. (Practicum) Pre: methods course(s) of department involved. Not for graduate credit in education. Staff
- 485 Seminar in Teaching (I and II, 3) Practicum for teachers, their immediate problems, use of resource materials, and cooperative help of other members of seminar. Areas include: secondary nonvocational, elementary education, home economics, resource development, business, music, physical education (S/U only), theatre. (Seminar) Pre: concurrent enrollment in 484 and permission of chairperson. Not for graduate credit in education. Staff
- 486 Student Teaching in Elementary Physical Education (I and II, 6) Under selected and approved critic teachers, students participate in classroom teaching and other school activities. (Practicum) Pre: methods courses of department. Not for graduate credit in education. Staff
- 487 Student Teaching in Secondary Physical Education (I and II, 6) See 486.

488 Student Teaching in Special Physical Education (I and II, 6) See 486.

489 Student Teaching in Health Education (I and II, 6) See 486.

500 Foundations of Adult Education (I and II, 3) Examination of fundamental structure, functions, problems, and history of adult education in America. Focus on socioeconomic factors and philosophical commitments that have shaped various programs. (Lec. 3) Pre: graduate or senior standing and permission of instructor. Russo and **Boulmetis**

502 The Modern Curriculum Movement (1, 3) Development of recent thinking of American curriculumists. The nature of curriculum development analyzed through the traditionalist, social scientific, and reconceptualist schools of thought. (Lec. 3) Willis

503 Education in Contemporary Society (II, 3) Leading educators' responses to issues and challenges confronting American education. Emphasis on identification and analysis of contemporary theories and practices reflecting the relationship between characteristics of society and educational values. (Lec. 3) Russo and Willis

504 Adult Basic Education (I and II, 3) Teaching of adults whose educational level is below high school completion. Physical, social, and psychological characteristics of disadvantaged adults and various techniques and materials useful in motivating and teaching them. (Lec. 3) Pre: permission of instructor. Staff

505 Leadership Development in Adult Programs (I or II, 3) Discussion of leadership concepts, styles, and implications. Discussion and practice in the use of several adult education methods and techniques for increasing the effectiveness of groups and organizations. (Lec. 3) Pre: permission of instructor. Staff

506 Foundations of Education: Teaching and Learning (SS, 7) Philosophical, cultural, and psychological foundations of American education. Focus on ideological beliefs, cultural factors, and psychological principles and practices that shape teaching and learning. Field work integrated with classroom assignments. Pre: permission of chairperson. Russo or Sullivan

508 Interdisciplinary Curriculum Development (I, II, or SS, 3) Curriculum development of interdisciplinary units for elementary and middle schools. Focus is on grade-level units which incorporate multiple subject areas. Both individual and group projects required. (Lec. 3) Pre: teacher certification. Staff

514 Current Trends in Elementary Education (1, 3) For teachers and administrators, the most effective use of instructional materials, media of communication, and personnel in elementary school. (Lec. 3) Pre: 529 or permission of chairperson. In alternate years. Next offered 1995-96. Staff

516 Teaching English as a Second Language to Adults (II, 3) Methods and materials for educators who teach English as a second language to adults. (Lec. 3) Pre: permission of instructor. Staff

517 Teaching Social Studies in the Elementary School (I, II, or SS, 3) Intensive research in various cross-subject topics within the social studies. Systematic analyses of learning theories and methods as they relate to the teaching of social studies in the elementary grades. (Lec. 3) Pre: graduate or postgraduate standing. MacMillan

518 Teaching Science in the Elementary School (I or II, 3) Emphasis on the development, preparation, use, and evaluation of materials appropriate for the elementary classroom from biology, zoology, chemistry, physics, geology, astronomy, electricity, meteorology, and oceanography. (Lec. 3) Pre: 12 credits in science. Staff

520 Teaching of Arithmetic (1, 3) For the experienced teacher, examination of the principles underlying the teaching of arithmetic in the elementary school; comprehensive survey of materials and methods available for the classroom teacher of arithmetic. (Lec. 3) Pre: senior or graduate standing. In alternate years. Next offered 1996-97. Staff

521 Teaching Basic Reading to Adults (I or II, 3) Techniques for teaching basic reading skills to illiterate adults; diagnosis, methods, and materials. (Lec. 3) Pre: 504 or permission of instructor. Staff

522 Microcomputer Applications in the Classroom (I and II, 3) Introduction to the use of microcomputers in elementary and secondary classrooms. History, current use, techniques for evaluating hardware and software, implementation issues, future developments. (Lec. 3) Pre: senior or graduate standing. Staff

528 Teaching Language Arts (II, 3) For the elementary school classroom teacher. Preparation, presentation, use, and evaluation of methods and materials for teaching the communications skills (emphasis on listening, speaking, and writing). (Lec. 3) Pre: seniar or graduate standing. In alternate years. Next offered 1996-97. Staff

529 Foundations of Educational Research (I and II, 3) Analysis of the current major research approaches to educational problems with emphasis on interpreting published research involving the language of statistics. Functional skills in basic descriptive statistics needed prior to enrolling. (Lec. 3) Purnell

530 Qualitative Research and Evaluation (I or II, 3) Qualitative methods, including ethnography, for obtaining and using data in describing, interpreting, and reaching warranted judgments, particularly about educational and social problems. Emphasis on developing individual projects and writing formal reports. (Lec. 3) Willis

534 Mathematics in the Secondary School (II, 3) Implementation of a modern mathematics program in the secondary school through a study of modern mathematics concepts, experimental programs, and instructional planning. (Lec. 3) Pre: 15 credits in mathematics. Croasdale

535 Classroom Observation and Evaluation (1 or II, 3) Practicum in informal, naturalistic methods of observing and evaluating classrooms. Designed to increase teachers' and administrators' understanding of their own and others' classrooms in fostering individual and staff professional development. (Lec. 2, Lab. 2) Pre: teaching experience, eligibility for teacher certification, or permission of instructor. Willis

538 Teaching the Gifted and Talented (I or II, 3) Social, psychological, legal, and educational issues related to identification, selection, and instruction of gifted and talented students. (Lec. 3) Pre: one undergraduate general psychology course, graduate standing, or permission of instructor, Sullivan

539 Evaluation and Monitoring of Occupational Training Programs (I or II, 3) Evaluation and monitoring theory and practice for occupational training programs. Focus on development of systems for job training such as CETA, Vocational Education, and private sector programs. (Lec. 3) Pre: 529 or permission of instructor. **Boulmetis**

540 Learning Disabilities: Assessment and Intervention See Psychology 540.

563 Teaching Reading to Multicultural Populations (1, 3) Identification of the strengths of learners whose cultural and socioeconomic

backgrounds vary, and the implications for teaching reading. Special emphasis on the selection and development of appropriate materials and teaching strategies. (Lec. 3) Pre: 424 or permission of instructor. Staff

564 Reading Diagnosis and Intervention (SS, 4) Emphasizes traditional and alternative methods for diagnosing readers' weaknesses and strengths. Focuses on matching the diagnosed needs of the individual reader with appropriate instructional intervention strategies. (Lec. 4) Pre: acceptance into the master's program in reading education. Hoyt or Barton

565 Analysis and Evaluation of Current Research in Reading (1, 3) In-depth review of reading research on selected topics. Analysis of findings in historical perspective. Implications for reading teachers and reading programs. (Sem. 3) Pre: 424 or permission of instructor. In alternate years. Next offered 1995-96. Staff

566, 567 Practicum in Reading (I and II, 3 each) Supervised case studies, practicum, and seminar reports on an individual reading project at either the elementary or secondary level. (120 hours plus seminar) (Practicum) Pre: 564 or permission of instructor. Staff

569 Middle School Curriculum (SS, 3) Current middle school curriculum organization and materials with emphasis on the flexibility and integration of various content areas. (Lec. 3) Pre: graduate standing. Staff

570 Elementary School Curriculum (II, 3) Modern curriculum in the elementary school with emphasis on the needs of children. Covers language arts, social studies, science, arithmetic, and special subjects. (Lec. 3) Pre: 503, 529 or equivalent. In alternate years. Next offered 1995-96. Staff

574 Current Trends in Secondary Education (I and II, 3) Effective use of instructional materials, rnedia of communication, and organization of personnel and current research. (Lec. 3) Pre: 529, 571 or permission of chairperson. Staff

575 Supervised Field Study/Practicum and Seminar in Education (I and II, 3) For nonthesis candidates. Lectures, seminars, and field work. Candidates plan and conduct a field study/ practicum project approved by the instructor and the student's professor. A formal proposal is developed, submitted, and approved, the project completed, and a formal paper defended. (Practicum) Pre: admission to a master's program in education and permission of instructor. May be repeated for a maximum of 6 credits. Staff

577 Organization and Administration in Elementary School (1, 3) Functions and duties of elementary school principals. (Lec. 3) In alternate years. Next offered 1995-96. Staff

579 Labor Relations and Collective Bargaining in Education

See Labor and Industrial Relations 579.

581 Administering Adult Programs (1 or II, 3) Administration, personnel management, resource management, recruitment, staff development, and supervision within programs dealing with adults as learners. (Lec. 3) Pre: 505 or permission of instructor. Staff

582 Instructional Systems Development for Adult Programs (1, 3) Designing and implementing instructional systems. Discussion of the basic tenets underlying theories of instructional technology, curriculum development, and curriculum change as they apply to adult learners in a variety of settings. (Lec. 3) Pre: 580 or 581 or permission of instructor. Staff

583 Planning, Design, and Development of Adult Learning Systems (1, 3) Overview of the program planning process including goal setting, needs analysis, program planning, and implementing change strategies. Discussion of effective functioning in the role of change agent within an organization. (Lec. 3) Pre: permission of instructor. Staff

584 The Adult and the Learning Process (1 and II, 3) Examination of the adult as a learner with emphasis on the factors that affect adult learning and learning processes related to instruction. (Lec. 3) Pre: 581 or permission of instructor. Staff

586, 587 Problems in Education (I and II, 0-3 each) Advanced work for graduate students in education. Courses conducted as seminars or as supervised individual projects, (Independent Study) Pre: permission of chairperson. May be repeated for credit with different topic. Staff

593 Teaching Social Studies in the Secondary School (1, 11, or SS, 3) Research and examination of the structure, functions, and problems of teaching social studies in the secondary school. Emphasis on researching current social problems as they relate to their historical antecedents. (Lec. 3) Pre: teacher certification or permission of instructor. MacMillan

594 Organization and Supervision of Reading Programs (II, 3) Various roles of the reading specialist in relation to the other line-staff personnel. Problems concerning the orientation of new teachers, reading research and development, in-service programs, and community support. (Lec. 3) Pre: 562. In alternate years. Next offered 1995-96. Staff

596 Organization Development in Education See Human Development and Family Studies

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

920 Workshop for Teachers (I and II, 1-3) Current issues in education. Specific topics offered for inservice teachers and administrators. May be repeated with different topic. (Workshop) Pre: teacher certification. Staff

Ph.D. in Education (EDP)

Co-Director: Professor McKinney

610 Core Seminar 1: Issues and Problems in Educational Inquiry and Foundations (1, 3) Examination of issues and problems related to philosophical and historical aspects of educational thought and the role of society. Empirical analysis of classroom settings is emphasized. (Seminar) Pre: admission to the Ph.D. program in education, concurrent enrollment in 612. Staff

611 Core Seminar I: Issues and Problems in Educational Inquiry and Foundations (II, 3) Examination of issues and problems related to philosophical and historical aspects of educational thought and the role of society. Empirical analysis of classroom setting is emphasized. (Seminar) Pre: 610 and 612, concurrent enrollment in 613. Staff

612 Field Research I (1, 1) Focusing on classrooms, students examine theory, define problems, collect data, and present findings. A contract is developed among students, the instructors, and field professionals which states the work to be performed. Pre: admission to the Ph.D. program in education, concurrent enrollment in 610. Staff

613 Field Research I (II, 1) Focusing on classrooms, students examine theory, define problems, collect data, and present findings. A contract is developed among students, the instructors, and field professionals which states the work to be performed. Pre: 612, concurrent enrollment in 611. Staff

615 Research Methodologies (II, 3) Four educational research methodologies (historical, qualitative, quantitative, and philosophical) are reviewed. Each methodology is examined for its contribution to knowledge and understanding

of teaching and learning in an educational setting. (Lec. 3) Pre: concurrent enrollment in 611 or permission of instructor. Staff

- 620 Core Seminar II: Issues and Problems in Human Development, Learning, and Teaching (1, 3) Issues and problems related to human development, curriculum, teaching, and learning are examined. Ways of gathering and evaluating evidence about school and curriculum effectiveness are emphasized. (Seminar) Pre: 610, 611, 615, concurrent enrollment in 622, Staff
- 621 Core Seminar II: Issues and Problems in Human Development, Learning, and Teaching (II, 3) Issues and problems related to human development, curriculum, teaching, and learning are examined. Ways of gathering and evaluating evidence about school and curriculum effectiveness are emphasized. (Seminar) Pre: 620, concurrent enrollment in 623. Staff
- 622 Field Research II (1, 2) Focusing on the school, students examine theory, define problems, collect data, and present findings. A contract is developed among the students, instructors, and field professionals which states the work to be performed. Pre: concurrent enrollment in 620. Staff
- **623 Field Research II** (*II*, 2) Focusing on the school, students examine theory, define problems, collect data, and present findings. A contract is developed among the students, instructors, and field professionals which states the work to be performed. Pre: concurrent enrollment in 621. Staff
- 625 Quantitative Analysis in Educational Research (1, 3) Educational research data is quantitatively analyzed. Data collected during Core Seminar I are analyzed and interpreted. Applications of the General Linear Model to a variety of research designs and analytic strategies are emphasized. (Lec. 3) Pre: 610, 611, 615, or permission of instructor. Staff
- 630 Core Seminar III: Issues and Problems in Organizational Theory, Leadership, and Policy Analysis (1, 3) Issues and problems related to applications of organizational theory, leadership theory, and policy analysis are studied. Core seminar examines cases related to district, state, and/or regional educational offices and agencies. (Seminar) Pre: 620, 621, 622, 623, concurrent enrollment in 632. Staff
- 631 Core Seminar III: Issues and Problems in Organizational Theory, Leadership, and Policy Analysis (II, 3) issues and problems related to applications of organizational theory,

- leadership theory, and policy analysis are studied. Core seminar examines cases related to district, state, and/or regional educational offices and agencies. (Seminar) Pre: 630, 632, concurrent enrollment in 633. Staff
- 632 Field Research III (1, 1) Content includes district, state, or regional problems involving educational leadership, school organization, or public policy. A contract is developed among the students, instructors, and field personnel which states the work to be performed. Pre: concurrent enrollment in 630. Staff
- 633 Field Research III (II, 1) Content includes district, state, or regional problems involving educational leadership, school organization, or public policy. A contract is developed among the students, instructors, and field personnel which states the work to be performed. Pre: concurrent enrollment in 631. Staff
- 699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U only. Staff

Electrical Engineering (ELE)

Chairperson: Professor Ohley (Electrical and Computer Engineering)

- 201 Digital Circuit Design (I, 3) Logic gates, Boolean algebra, combinatorial and sequential circuits, analysis and design of sequential systems, multi-input system controllers, asynchronous finite state machines. (Lec. 3) Pre: sophomore standing. Staff
- 202 Digital Circuit Design Laboratory (1, 1) Laboratory experience in digital electronics; logic design projects using standard integrated circuits. (Lab. 3) Pre: credit or concurrent enrollment in 201. Staff
- 205 Microprocessor Laboratory (I and II, 3) Hands-on familiarization with computer and microprocessor software and hardware. Computer architecture and interfacing with input and output devices. (Lec. 2, Lab. 3) Pre: credit or concurrent enrollment in MTH 141. Staff
- 210 Introduction to Electricity and Magnetism (1, 3) Static electric and magnetic fields; Gauss's, Coulomb's, and Ampere's laws; capacitance and inductance. Behavior of electric charges in stationary and time-varying fields. Lumped versus distributed parameters; electric circuit concepts, principles, and theorems. (Lec. 3) Pre: MTH 142 and PHY 213. Staff

- 212 Linear Circuit Theory (II, 3) Kirchoff's Laws, DC-resistive networks, dependent sources, natural and forced response of first- and secondorder circuits, sinusoidal steady-state response, phasors, AC power. (Lec. 3) Pre: MTH 243 and credit or concurrent enrollment in 362. Staff
- 215 Linear Circuits Laboratory (II, 2) DC measurements, natural and step response of first- and second-order circuits, AC measurements, impulse and frequency response, operational amplifier circuits. (Lec. 1, Lab. 3) Pre: credit or concurrent enrollment in 212. Staff
- 220 Passive and Active Circuits (II, 3) Electrical circuit laws and theorems, transient and steadystate response, phasors, frequency response, resonance. Diode and transistor circuits, digital logic devices. (Lec. 3) Pre: PHY 204, 214 or ELE 210. Not open to electrical engineering majors. Staff
- 221 Electronic Instruments and Electromechanical Devices (1, 3) Amplifiers, frequency response, feedback, field effect transistors, operational amplifier applications, electrical measurements. Magnetic circuits, transformers, electromechanical transducers, and systems, DC and AC machines. (Lec. 3) Pre: 220. Not open to electrical engineering majors. Staff
- Admission to all 300-level courses in electrical engineering is limited to students formally transferred to the College of Engineering. Prerequisites for all 300-level courses in electrical engineering include mathematics through MTH 243, ELE 210 or PHY 214, ELE 212 and 215. Additional prerequisites are indicated with each course. Exceptions are possible, with permission of the chairperson, for advanced students in other disciplines.
- 313 Linear Systems (I, 3) Fourier series, Fourier transform, bilateral Laplace transform, transfer function, transient and steady-state response, natural response and stability, signal flow graphs, convolution integral, introduction to state-space analysis. (Lec. 2, Lab. 3) Pre: 212. Staff
- 314 Linear Systems and Signals (II, 4) Continuous-time and discrete-time systems, frequency response, stability criteria, z-transforms, filters, sampling, introduction to controls systems, and applications. Students will design a system and report on its characteristics. (Lec. 4) Pre: 313. Staff
- 322 Electromagnetic Fields I (I, 3) Electrostatics and magnetostatics, forces on charged particles. Analysis employs vector algebra and vec-

- tor calculus in orthogonal coordinates. Simple applications to engineering problems. (Lec. 3) Pre: MTH 243 and one of the following—ELE 210, PHY 204 or 214. Staff
- 323 Electromagnetic Fields II (II, 4) Transmission lines, Maxwell's equations, wave equation, reflection and refraction phenomena, waveguides and antennas. Design projects requiring application of electromagnetic theory and use of numerical methods. (Lec. 4) Pre: MTH 362 and ELE 322. Staff
- 331 Introduction to Solid State Devices (1, 3) Properties of solids, chiefly semiconductors, which are utilized in modern electronic devices. The physics of these materials and devices is stressed, but some time is devoted to fabrication technology and applications. (Lec. 3) Pre: PHY 306 or 341 or equivalent. Staff
- 342 Electronics I (II, 4) Introduction to diode and transistor circuits. Biasing, analysis, and design of BIT and FET amplifiers. SPICE, power amplifiers, digital logic families, TTL, ECL, CMOS. (Lec. 3, Lab. 3) Pre: 212, 215, and 331. Staff
- **391, 392 Honors Work** (I and II, 1–3 each) Independent study and seminar-type work under close faculty supervision. Discussion of advanced topics in electrical engineering in preparation for graduate work. (Independent Study) Pre: junior standing and permission of chairperson.
- Prerequisites for all 400-, 500-, and 600-level electrical engineering courses include mathematics through calculus (MTH 243), at least 6 credits in circuit theory, and 3 credits in electromagnetic fields. Additional prerequisites are indicated with each course. Some circuits and fields prerequisites may be waived for 481, 482, 545, 588, and 589 for students with suitable backgrounds.
- 400 Introduction to Professional Practice (I or II, 1) Discussions with faculty, visiting engineers, and invited speakers on ethical, social, economic, and safety considerations in engineering practice; career planning; graduate study. (Seminar) Pre: senior standing in electrical engineering or computer engineering. Nat for graduate credit. Staff
- 401 Lasers, Optical Systems, and Communications (1, 4) Concepts of modern optics, coherence, diffraction, and Fourier optics, optical resonators, Gaussian beam optics, laser fundamentals, and light amplification. Course includes a design project concerning an optical system or instrument. (Lec. 3, Lab. 3) Pre: 323. Staff

- 405 Digital Computer Design (II, 3) Hardware implementation of digital computers. Arithmetic circuits, memory types and uses, control logic, basic computer organization, microprogramming, input/output circuits, microcomputers. (Lec. 3) Pre: 205 or CSC 311. Staff
- 408 Computer Organization Laboratory (II, 4) Engineering design problems involving modern microprocessor systems, operation of ALVs, data paths, control units, input/output, and memory systems. (Lec. 2, Lab. 5) Pre: 405 or CSC 311. Staff
- 427 Electromechanical Systems Laboratory (1, 4) State-variable models. Electromechanical devices and systems in translation and rotation. Design of sensors, actuators, and systems as used in control applications. (Lec. 3, Lab. 3) Pre: 313 and 322. Staff
- 432 Electrical Engineering Materials (II, 4) Continuation of 331. Electronic and optical properties of materials, mainly semiconductors, applied to the performance and design of electronic devices. Measurements and analysis of these properties will be performed in the laboratory. (Lec. 4) Pre: 331 or equivalent. Staff
- 436 Communication Systems (1, 4) Representation of signals and noise. Basic principles of modulation and demodulation. Waveform and digital transmission systems. Design of a component of a communication system. (Lec. 4) Pre: 313 and 314. Staff
- 437 Computer Communications (II, 3) Computer networks, layering standards, communication fundamentals, error detection and recovery, queuing and delay-thruput trade-offs in networks, multiple-access channels, design issues in wide and local area networks. (Lec. 3) Pre: 436 or MTH 451 or IME 411. Staff
- 443 Electronics II (1, 5) Signal flow graph analysis techniques, biasing and stability, small signal amplifiers, frequency response characteristics, operational amplifiers, SPICE, and nonlinear circuits. Computer-aided design of amplifiers and active filters. (Lec. 3, Lab. 5) Pre: 342. Staff
- 444 Advanced Electronic Design (II, 4) Design of advanced digital circuits, distributed circuits, circuit and logic simulation, interfacing, designs based on MSI and LSI components, EPROMS, and PALS. (Lec. 3, Lab. 3) Pre: 342. Staff
- 447 VLSI Design and Simulation (II, 4) Design and simulation of digital integrated circuits. Extensive use of software tools such as magic, circuit extractors, and simulators. Student designs are fabricated and tested. (Lec. 2, Lab. 5) Pre: 342. Staff

- 457 Feedback Control Systems (1, 3) Fundamental techniques for the analysis and design of linear feedback systems. Stability, sensitivity, performance criteria, Bode diagrams, Nyquist criterion, root locus techniques, state variables, and compensation methods. (Lec. 3) Pre: 313.
- 458 Systems Laboratory: Digital Control Laboratory (II, 4) Design of digital control systems using state-space techniques. State feedback and observers. Laboratory includes computer simulation and hardware implementation of control laws for electromechanical systems. (Lec. 3, Lab. 3) Pre: 457 and permission of instructor. Staff
- 482 Biomedical Engineering Seminar (II, 1) Selected topics in biomedical engineering research from current scientific literature. Presented by students and invited staff. (Seminar) Pre: permission of chairperson. Ohley
- 491, 492, 493 Special Problems (I and II, 1 each) Special engineering problems assigned to student according to his or her interests and capabilities. (Independent Study) Pre: permission of instructor. Staff
- 495 Electrical Engineering Practice I (I, II, or SS, 3) Industrial experience in electrical engineering at companies or government laboratories selected by department. Student works on a design or other engineering project under supervision of engineers from industry and URI faculty. Major written report required. (Practicum) Pre: senior standing in electrical engineering and permission of chairperson. Not for graduate credit in electrical engineering. Staff
- 501 Linear Transform Analysis (1, 3) Fourier and Laplace transform analysis of continuoustime systems, causality and spectral factorization, evaluation of inverse transforms, z-transform analysis of discrete-time systems, Hilbert transforms, discrete Fourier transforms, generalized transforms. (Lec. 3) Staff
- 502 Nonlinear Control Systems (II, 3) Analysis of nonlinear systems: phase-plane analysis, Lyapunov theory, advanced stability theory, describing functions, design of nonlinear control systems: feedback linearization, sliding control. (Lec. 3) Pre: 503 or permission of instructor. Staff
- 503 (or MCE 503) Linear Control Systems (I or II, 3) State-variable description of continuoustime and discrete-time systems, matrices and linear spaces, controllability and observability, pole-placement methods, observer theory and state reconstruction, modern control systems

design. (Lec. 3) Pre: 313 or MCE 366 or equivalent. Staff

- 504 (or MCE 504) Optimal Control Theory (II, 3) Quadratic performance indices and optimal linear control, frequency response properties of optimal feedback regulators, state estimation, separation theorem, optimal control of nonlinear systems, Pontryagin's minimum principle. (Lec. 3) Pre: 503. Staff
- 506 Digital Signal Processing (II, 3) Digital representations of signals and noise; sampling and aliasing; design of digital-processing systems for signal parameter estimation and signal detection; digital filter structures; discrete Fourier transform and FFT algorithm, periodogram. (Lec. 3) Pre: 501 and 509. Staff
- 509 Systems with Random Inputs (1 or 11, 3) Discrete and continuous linear systems with random inputs. Introduction to random processes in the context of linear systems. Applications to detection, smoothing, and prediction. (Lec. 3) Pre: knowledge of differential equations, linear systems, and transform methods. Staff
- 510 Communication Theory (II, 3) Communication theory for discrete and continuous channels. Optimum-receiver principles and signal design. Channel models, modulation techniques, data compression, speech and image coding, architecture and topology of communication networks. (Lec. 3) Pre: 509. Staff
- 511 Engineering Electromagnetics (1, 3) Review of electrostatics and magnetostatics. Maxwell's equations, wave propagation in dielectric and conducting media. Boundary phenomena. Radiation from simple structures. Relations between circuit and field theory. (Lec. 3) Staff
- 515 Quantum Electronics (I or II, 3) Laser engineering and applications, interaction of radiation with atoms, optical resonators, electrooptic modulation, harmonic generation, parametric oscillation and frequency conversion, noise in laser amplifiers and oscillators. (Lec. 3) Pre: PHY 341 or permission of instructor. Staff
- 525 Fiber Optic Communication Systems (II, 3) Survey of important topics in optical communication devices and systems. The physical principles and operation of lasers, LEDs, fibers, and detectors are covered. (Lec. 3) Pre: 323, 331, 401 or equivalent. Lengyel
- 526 Fiber Optic Sensors (II, 3) Theory and performance of different types of intensity-, phase-, and polarization-modulated fiber optic sensors (FOS) and their application areas. Properties of

- various active and passive devices used in building FOS. (Lec. 3) Pre: 401 or equivalent. Sunak
- 527 Current Topics in Lightwave Technology (1, 3) Current topics of importance in lightwave technology including coherent fiber optical communication systems, optical amplifiers, active and passive single-mode devices, infrared optical fibers. Material will be taken from recent literature. (Lec. 3) Pre: 525 or equivalent. Sunak
- 531 Solid State Engineering I (I or II, 3) Review of quantum mechanics, crystal properties, energy-band theory, introduction to scattering, generation-recombination processes, Boltzmann's transport equation, semiconductor junctions, devices. (Lec. 3) Pre: 331 or equivalent. Staff
- 532 Solid State Engineering II (I or II, 3) Properties of insulators, semiconductors, conductors, and superconductors from quantum mechanical principles. Semiconductor physics and band theory of solids as applied to current semiconductor and optoelectronic devices. (Lec. 3) Pre: 531 or equivalent. Staff
- 536 Semiconductor Electronics (1 or II, 3) Theory and technology of semiconductor devices, lunction, field effect, optoelectronic and microwave devices. Integrated circuits. (Lec. 3) Pre: 331 or equivalent, Sadasiv
- 537 VLSI System Design (I or II, 3) Very largescale integration. Silicon technology; NMOS, CMOS, and bipolar devices; circuits and digital subsystems; computer-aided design and analysis of VLSI circuits; VLSI and digital system architecture. (Lec. 3) Pre: graduate standing or senior standing with permission of instructor. Sadasiv
- 539 Analog VLSI (I or II, 3) Theory and techniques of analog NMOS and CMOS integrated circuits. Device modeling, circuit simulation, and chip design are studied using amplifiers, A/Ds, and switched-capacitor circuits as examples. (Lec. 3) Pre: 537. Daly
- 542 Fault-Tolerant Computing (I or II, 3) Fault and error modeling, reliability modeling and evaluation, fault-tolerant computer systems, digital and mixed analog/digital VLSI testing, concurrent error detection, and design for VLSI yield enhancement. (Lec. 3) Pre: 405 or equivalent or permission of instructor. Staff
- 544 Computer Arithmetic for VLSI (II, 3) Review of number systems and computer arithmetic: hardware implementation of fixed- and floating-point adders, multipliers and dividers; VLSI implementation of residue arithmetic finite fields; error analysis and time/gate complexity

- of arithmetic operations. (Lec. 3) Pre: 405. Kumaresan
- 545 Design of Digital Circuits (1, 3) Design techniques for digital computers and controllers. Combinatorial and sequential circuits, minimization techniques, fast arithmetic circuits, memory and control circuits, floating-point hardware, Turing machines, coders and decoders, microprogramming, sequence generators. (Lec. 3) Pre: 405 or equivalent. Staff
- 546 Computer-Based Instrumentation (1, 3) Design of memory systems, input-output techniques, direct memory access controllers, instrument buses, video displays, multiprocessorscoprocessors, real-time operations, device handler integration into high-level language and mass storage. (Lec. 2, Lab. 3) Pre: 205, 314, and concurrent enrollment in 405. Ohley and Sun
- 548 Computer Architecture (1 or II, 3) Classification and taxonomy of different computer architectures. Pipelining and RISC machines, vector and array processors, multiprocessors, dataflow computers. Cache memory and virtual memory systems, and multiprocessor algorithms. (Lec. 3) Pre: 405. Staff
- 549 Computer System Modeling (1, 3) Basic techniques used in computer system modeling, queuing theory, stochastic processes, Petri net, product form networks, approximation techniques, solution algorithms and complexity, computer simulation, performance studies of modern computer systems. (Lec. 3) Pre: 548 and 509 or concurrent enrollment in MTH 451, Staff
- 571 Underwater Acoustics I See Ocean Engineering 571.
- 575 (or MTH 575) Approximation Theory and Applications to Signal Processing (II, 3) Interpolation; uniform approximation; least squares approximation; Hilbert space; the projection theorem; computation of best approximations; applications to the design of filters and beamformers, position location and tracking, signal parameter estimation. (Lec. 3) Pre: advanced calculus, elements of the theory of functions of a complex variable, and elements of linear algebra.
- 581 Special Topics in Artificial Intelligence See Computer Science 581.
- 583 (or CSC 583) Computer Vision (1, 3) Algorithms used to extract information from twodimensional images. Picture functions. Template matching. Region analysis. Contour following. Line and shape descriptions. Perspective transformations. Three-dimensional reconstruction.

Image sensors. Interfacing. Applications. (Lec. 3) Pre: MTH 362 or equivalent. Staff

584 (or STA 584) Pattern Recognition (II, 3) Random variables, vectors, transformations, hypothesis testing, and errors. Classifier design: linear, nonparametric, approximation procedures. Feature selection and extraction: dimensionality reduction, linear and nonlinear mappings, clustering, and unsupervised classification. (Lec. 3) Pre: 509, CSC 410 or introductory probability and statistics, and knowledge of computer programming. Staff

588 Biomedical Engineering (1, 3) Modeling of biosystems. Electrical properties of biological materials. Electrocardiography, vectorcardiography. Models of nerve propagation. (Lec. 3) Pre: ZOO 345 or equivalent, knowledge of differential equations, senior or graduate standing. Staff

591, 592 Special Problems (I and II, 1-3 each) Advanced work under supervision of a staff member arranged to suit individual requirements of student. (Independent Study) Pre: graduate standing. May be repeated for a maximum of 6 credits. Staff

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

601, 602 Graduate Seminar (I and II, 1 each) Seminar discussions including the presentation of papers based on research or detailed literature surveys. (Sem. 1) Required of all graduate students with a maximum of 1 credit per year allowed. May be repeated for a maximum of 2 credits. S/U credit. Staff

606 Digital Filter Synthesis (1, 3) Review of z-transforms and discrete-time systems, properties of digital-filter networks, design of finite and infinite-impulse-response filters, accuracy considerations for coefficients and data, hardware implementation, system examples, (Lec. 3) Pre: 506 or equivalent. Jackson

625 Guided Waves in Optical and IR Fibers (1, 3) Guided electromagnetic wave aspects of optical and IR fibers, novel approximation methods for solution of vectorial and scalar wave equations in optical fibers, theory of transparency and nonlinear optical interactions in solids as applied to design of optical fibers. (Lec. 3) Pre: 511 and 525. Mitra

660 Advanced Topics in System Theory (I or II, 3) Seminar for advanced students. Selected topics of current research interest. Material will be

drawn primarily from recent literature. (Lec. 3) Pre: permission of instructor. Staff

661 Estimation Theory (I or II, 3) Extraction of information from discrete and continuous data, best linear estimation, recursive estimation, optimal linear filtering, smoothing and prediction, nonlinear state and parameter estimation, design and evaluation of practical estimators. (Lec. 3) Pre: 503 and 509. Staff

665 Modulation and Detection (I or II, 3) Advanced treatment of modulation and detection theory. Minimum meansquare error, maximum likelihood, and maximum posterior probability estimators. Applications to communications systems and to radar and sonar systems. (Lec. 3) Pre: 510. Kay or Tufts

670 Advanced Topics in Signal Processing (I or II, 3) Seminar for advanced students. Selected topics of current research interest. Material will be drawn primarily from recent literature. (Lec. 3) Pre: 506 and 606. Staff

672 Underwater Acoustics II See Ocean Engineering 672.

677 (or OCE 677) Statistical Sonar Signal Processing (1 or 11, 3) Basic results in probability and statistics, signal processing, and underwater acoustics are applied to the design of detection, estimation, and tracking in active sonar, passive sonar, and underwater acoustic communication. (Lec. 3) Pre: MTH 451 or ELE 509, ELE 506, and ELE 571 (or OCE 571), or equivalents. ELE 510 is useful and closely related, but not required. Stepanishen or Tufts

691, 692 Special Problems (I and II, 1-3 each) Advanced work under supervision of a staff member arranged to suit individual requirements of a student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 6 credits. S/U credit. Staff

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Engineering (EGR)

091 Cooperative Education Internship: Part-Time (I and II, 0) Educational work experience in a selected engineering field. Ten to 20 hours per week at the employer's facility. (Practicum) Pre: matriculating status with at least junior standing and 2.50 quality point average. Vandeputte

092 Cooperative Education Internship: Full-Time (I and II, 0) Educational work experience in a selected engineering field. Students will work full-time as determined by the employer. (Practicum) Pre: matriculating status with at least junior standing and 2.50 quality point average. Vandeputte

101 Introduction to Engineering (I or II, 3) Introduction to various engineering curriculums. Highlights of programs and research areas in chemical, material, civil and environmental, electrical, computer, industrial and manufacturing, mechanical, and ocean engineering. (Lec. 3) Staff

102 Basic Graphics (I, 1) Theory of orthographic projection and principles of descriptive geometry, construction of exact drawings of three-dimensional objects including auxiliary views, pictorial drawings, cross-sections and dimensioning, free-hand sketching. (Lec. 1, Lab. 2) Staff

411 (or GER 411) Advanced Technical German (II, 3) Seminar on advanced scientific and engineering topics in an international context. All reading, discussion, and associated writing is conducted in German. (Lec. 3) Pre: any 400-level course in German and senior standing in an approved engineering program. Not for graduate credit. Lengyel and Karamanlidis

English (ENG)

Chairperson: Professor K. Stein

103 Introduction to Literature See Writing 103.

160 (or CLS 160) Masterpieces of Literature (I and II, 3) Introduction to the major works of world literature. (Lec. 3) Staff (A)

205 Creative Writing (I and II, 3) Various types of creative composition: essays, stories, and poetry. Students analyze work by class members and by professional writers. Only students with an aptitude for writing should elect this course. (Lec. 3) Pre: permission of instructor. Staff

241, 242 American Literature I, II (I and II, 3 each) 241: Selections from American literature, beginnings to the mid-nineteenth century. 242: Selections from American literature, midnineteenth century to the present. (Lec. 2, Rec. 1) 241 not required for 242. Staff (A)

243 The Short Story (I and II, 3) Critical study of the short story from the early nineteenth century to the present. (Lec. 3) Staff (A)

- 247 (or AAF 247) Introduction to Pan-African Literature (II, 3) Comparative survey of major themes, genres, and motifs in the literature of Africa, the Caribbean, and Black America. Study of both oral and written literature with emphasis on the religious, historical, sociopolitical, and cultural ideas of black people. (Lec. 3) Staff (A)
- 248 (or AAF 248) Afro-American Literature from 1900 to Present (II, 3) Survey of modern Afro-American literature from publication of DuBois' Souls of Black Folk (1903) to the present. Also includes study of the literature of the Harlem Renaissance and the Black Arts Movement of the 1960s and 1970s. (Lec. 3) Staff (A)
- 251, 252 English Literature I, II (I and II, 3 each) 251: Selections from English literature, beginnings to 1798. 252: Selections from English literature, 1798 to the present. (Lec. 2, Rec. 1) Staff (A) for 251; (A) (F) for 252.
- 260 Women and Literature (I and II, 3) Critical study of selected topics. (Lec. 3) Staff (A)
- 263 The Poem (I and II, 3) Introduction to the study of poetry. (Lec. 3) Staff (A)
- 264 The Drama (I and II, 3) Introduction to the study of drama. (Lec. 3) Staff (A)
- 265 The Novel (I and II, 3) Introduction to the study of novels. (Lec. 3) Staff (A)
- 270 Literature of the Bible (I and II, 3) Introduction to poetry and narrative in the Old Testament and the Apocrypha, primarily in the Authorized (King James) Version. (Lec. 2, Rec. 1) Staff
- 280 Shakespeare (I and II, 3) Introduction to the major plays and poetry of Shakespeare. (Lec. 3) Staff (A)
- 300 Literature into Film (I and II, 3) Analysis of themes, techniques, and form in literature and film aimed at developing critical appreciation of printed and film narratives. Emphasis will alternate between fiction and drama. (Lec. 3) May not be repeated. Staff
- 305 Advanced Creative Writing (I and II, 3) Provides further training for students especially talented in creative writing. Increased emphasis on independent projects in longer forms of prose and poetry. (Lec. 3) Pre: 205 and permission of chairperson. Staff
- 310 Techniques of Critical Writing (I and II, 3) Practice in the writing of literary criticism. Methods of literary analysis illustrated and applied to specific works. (Lec. 2, Rec. 1) Staff

- 330 The Structure of American English (I and II, 3) A comparison of prescriptive and descriptive grammars and their effect on our attitudes concerning American English. The influence of contemporary language studies on literary criticism and the teaching of English. (Lec. 3) Staff (S)
- 332 (232) The Evolution of the English Language (I and II, 3) The history of English from its German origins, through the Norman Conquest, the Renaissance, and the Age of Enlightenment. Special attention to the cultural forces that molded a standard dialect. (Lec. 3) Staff (S)
- 335 Interdisciplinary Studies in Comparative Literature

See Comparative Literature Studies 335.

- 336 The Language of Literature (I and II, 3) An introduction to those linguistic theories which have recently been applied to literary style, meaning, and evaluation. Intensive study of the language of a particular writer or work. (Lec. 3) Staff
- 337 Varieties of American English (I and II, 3) A study of the regional and social varieties of American English with emphasis on and field work in New England dialects. (Lec. 3) Staff
- 340 Literary Heritage of New England to 1860 (I and II, 3) Literature of New England through the colonial, national, and romantic periods to the Civil War. Field trips will be taken to important literary sites. (Lec. 3) Staff
- 346 American Film Classics (I and II, 3) Study of major American film genres (the Western, Film Noir, Screwball Comedy) and of prominent American directors (Ford, Hitchcock, Hawks). Emphasis will vary. (Lec. 3) May be repeated with different topics. Tutt and Kunz
- 347 American Romanticism (I and II, 3) Poetry and prose of the American Romantic movement. Focus on Irving, Poe, Emerson, Thoreau, Hawthorne, Melville, and others. (Lec. 2, Rec. 1) Staff
- 348 American Realism (I and II, 3) Major developments in American Realism and Naturalism. Emphasis on the work of Twain, Howells, Crane, James, Dreiser. (Lec. 2, Rec. 1) Staff
- 349 Modern American Literature (I and II, 3) Poetry, drama, and fiction of the period during and since World War I. Emphasis on major figures such as Frost, Eliot, Stevens, O'Neill, Faulkner, Hemingway, and others. (Lec. 3) Staff
- 350 Literary Theory and Criticism See Comparative Literature Studies 350.

- 360 Africana Folk Life See African and Afro-American Studies 360.
- 362 (or AAF 362) Afro-American Poetry and Drama (1, 3) Critical study of Afro-American poetry and drama in the continued oral and written heritage of Africa and America, Focus on Hughes, Dunbar, Walker, Bullins, Baraka, Giovanni, Baldwin. (Lec. 3) Staff
- 363 (or AAF 363) Afro-American Fiction (1, 3) Critical study of the linguistic and thematic development of the Afro-American short story and novel, Focus on Wells Brown, Dunbar, Bontemps, Hughes, Wright, Elison, Margaret Walker, Morrison, Reed, Alice Walker, and Baldwin, (Lec. 3) Staff
- 364 (or AAF 364) The African Novel (11, 3) Critical study of contemporary African writers, with a focus on the literary traditions and issues expressed in the novel. (Lec. 3) Pre: AAF 250. Staff
- 366 Greek and Roman Drama (1, 3) Survey of Greek and Roman drama with special emphasis on art and achievement of major dramatists: Aeschylus, Sophocles, Euripides, Aristophanes, Plautus, Terence, and Seneca, (Lec. 2, Rec. 1) Staff (F)
- 367 The Epic (I and II, 3) Studies in epic literature from Homer to the modern period. Historical emphasis will vary with instructor. (Lec. 3) Staff
- 370 British Literature of the Middle Ages (II, 3) Introduction to various types of medieval literature, usually read in modern English versions. Chronicle and romance, lyric and satire, visionary and homiletic writings, drama. (Lec. 2, Rec. 1) Staff
- 371 British Literature of the Renaissance I (I and II, 3) Study of developments in sixteenthcentury poetry and prose with emphasis on the nondramatic works of More, Wyatt, Sidney, Spenser, Marlow, Shakespeare, and others. (Lec. 3) Staff
- 372 British Literature of the Renaissance II (I and II, 3) Study of developments in prose and poetry of the seventeenth century, especially the works of Bacon, Donne, Johnson, Browne, Herbert, Marvell, Milton, and others. (Lec. 3)
- 374 British Literature of the Enlightenment (/ and II, 3) Study of major trends in verse, satire, prose, drama, and fiction from the late seventeenth and eighteenth centuries in such writers as Dryden, Congreve, Swift, Johnson, and Sterne. (Lec. 3) Staff

- 376 British Romanticism (1 and 11, 3) Major poetry and significant nonfiction prose of Burns, Blake, Wordsworth, Coleridge, Byron, Shelley, Keats, and others. (Lec. 3) Staff
- 377 Victorian Literature (1 and 11, 3) Poetry, nonfiction prose, and novels from the early Victorian to the Edwardian periods. Emphasis on writers such as Carlyle, Browning, Dickens, Tennyson, Arnold, Hardy, Hopkins, Wilde, and others. (Lec. 3) Staff
- 379 Modern British Literature (I and II, 3) Poetry, drama, nonfiction prose, and selected fiction of the modern period. Emphasis on the work of Conrad, Joyce, Lawrence, Yeats, Thomas, and others. (Lec. 3) Staff
- 380 Chaucer (I and II, 3) Selections from Chaucer's major poems, read in Middle English. (Lec. 3) Staff
- 384 Milton (I and II, 3) Poetry and prose of John Milton, with special emphasis on Paradise Lost. (Lec. 3) Staff
- 385 Women Writers (I and II, 3) Analysis of the poetry, drama, or fiction of women writers. Emphasis on nineteenth-century, twentieth-century, or contemporary authors. Course may be repeated for credit when taken with different emphasis. (Lec. 3) Staff
- 394, 395 Independent Study (I and II, 1-3 each) Extensive individual study and research, culminating in a substantial essay. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 6 credits. Staff
- 397 The Literary Landscape of Britain (SS, 3) Taught in England, second summer session. Examines impact of English social and natural landscapes on, and their treatment in, selected literary works. (Lec. 3) Usually taught in conjunction with HIS 397. Staff (F)
- 399 Special Topics in Literature (I and II, 3) Specialized topics in the study of literature offered by specialists in the field. (Lec. 3) Staff
- 445 Ethnic Images in American Literature (II, 3) Critical study of writings by and about various ethnic groups in American literature. (Lec. 3) Pre: permission of instructor. Staff
- 446 Modern Drama (I and II, 3) Studies in representative works by modern American, British, Irish, and continental playwrights. (Lec. 3, Rec. 1) Staff
- 447 Modern British and American Poetry (I and II, 3) Studies in major contributions and movements in British and American poetry from 1900 to present. (Lec. 3, Rec. 1) Staff

- 448 Traditions of the American Novel (I and II, 3) Studies in the development of the American novel up to 1900. (Lec. 2, Rec. 1) Staff
- 458 Traditions of the British Novel (I and II, 3) Studies in the development of the British novel up to 1900. (Lec. 2, Rec. 1) Staff
- 468 Traditions of the Continental Novel (I and II, 3) Studies in major developments of the European novel (excluding England and Ireland) up to 1900. (Lec. 2, Rec. 1) Staff
- 469 The Modern Novel (I and II, 3) Studies in major developments in the novel since 1900, with primary emphasis on the British, American, or the continental novel. (Lec. 2, Rec. 1) Staff
- 472 Shakespeare's Plays (I and II, 3) Critical studies in Shakespeare's drama. May be repeated once with alternate syllabus. (Lec. 2, Rec. 1) Staff
- 474 (or AAF 474) Topics in Pan-African Literature (II, 3) Intensive study of specific authors, literary movements, or comparative themes in African and Afro-American literatures. (Lec. 3) May be repeated for credit. Staff
- 477 Traditions of British Drama (1 and 11, 3) Studies in major developments in British drama up to 1900. (Lec. 2, Rec. 1) Staff
- 485 American Authors (I and II, 3) Intensive study of the work of one or two outstanding American writers. May be repeated, barring duplication of writers being studied. (Lec. 3) Staff
- 486 British Authors (I and II, 3) Intensive study of the work of one or two outstanding British writers. May be repeated, barring duplication of writers being studied. (Lec. 3) Staff
- 488 (or WRT 488) Traditions of Nonfiction (I, Intensive historical study of a nonfiction form (essay, autobiography, documentary, true crime account, or science text). Form varies with each course offering. (Lec. 3) May be repeated for credit. Staff
- 494 Internship in English (1, 3) Practical job experience related to the English major. Exploration of career skills, goals, job search strategies. Placements in publishing and other environments. 120 hours, weekly one-hour class meeting. (Practicum) Pre: complete application, permission of instructor. Not for graduate credit. Staff
- 499 Senior Seminar (I and II, 3) Intensive study of literature and literary criticism as a discipline through selected works and authors, English and American, culminating in a substantial research project. (Seminar) Open only to senior English majors. Staff

- All 500-level courses require graduate standing or permission of instructor. All courses except ENG 510 may be repeated if emphasis changes.
- 501 Workshop in Creative Writing (1 or 11, 3) Close supervision and discussion of creative writing, including poetry, nonfiction, short prose forms, scripts, and novels. (Lec. 3) Staff
- 510 Introduction to Professional Study (I or II, 3) Orientation to the major discourses, critical frameworks, and databases constituting graduate research in language and literary studies, including computer-assisted research methodologies. (Lec. 3) Staff
- 512 Rhetorical Theory (I or II, 3) Introduction to selected rhetorical theories from classical to contemporary, intersecting with linguistics, semiotics, and philosophy, and including conceptions of meaning, power, and persuasion. (Lec. 3) Staff
- 514 Studies in Critical Theories (I or II, 3) Introduction to historical or contemporary studies in critical theory; e.g., modernity and postmodernity, aesthetics, politics, interpretative traditions, audiences. May explore semiotic, psychoanalytic, materialist, feminist, postcolonial, and cultural theories. (Lec. 3) Staff
- 520 Studies in Composition and Reading Research (1 or 11, 3) Investigation of current research in composition, reading, and the construction of audiences; pedagogies; conceptions of literacy. (Lec. 3) Staff
- 530 Studies in Language and Linguistics (I or II, 3) Investigation into the structure or evolution of spoken and written English. Use of contemporary linguistic theory to describe the language of regions/countries, literary genres/ authors, or historical periods. (Lec. 3) Staff
- 535 Old English (1, 3) Introduction to the language and literature. (Lec. 3) Pre: graduate standing or permission of instructor. Next offered spring 1996. Mensel
- 540 Studies in American Texts Before 1815 (1 or II, 3) Cultural texts and topics of the Western Hemisphere before 1815: literary and nonliterary writings and genres; exploration and captivity narrative; African transmissions; critical theory; culture, gender, race, and class. (Lec. 3)
- 543 Studies in Nineteenth-Century American Texts (1 or 11, 3) Literary and nonliterary cultural texts, genres, and topics of the Western Hemisphere. May include media; oral, industrial, and popular cultures; critical theory and the analysis

of discourses; issues of class, gender, and race. (Lec. 3) Staff

- 545 Studies in American Texts After 1900 (1 or II, 3) Modern, contemporary, and postmodern cultural texts, genres, and topics of the Western Hemisphere; e.g., literary and nonliterary writings, performance modes, media, theory, and cultural studies of race, genre, and class. (Lec. 3) Staff
- 550 Studies in British Texts Before 1700 (1 or II, 3) Literary and nonliterary cultural texts and genres of the medieval, Renaissance, and Restoration periods. May include oral and written forms; the roles of audience, gender, class, and other social relations. (Lec. 3) Staff
- 553 Studies in British Texts 1700-1832 (I or II, 3) Literary and nonliterary cultural texts and genres during the Restoration, Augustan, Enlightenment, and Romantic periods; e.g., drama, media, rhetoric, theory, and discourse analysis of gender, class, race, and other social relations. (Lec. 3) Staff
- 555 Studies in Nineteenth-Century British Texts (I or II, 3) Literary and cultural texts and genres during the nineteenth century. May include drama and other performance modes; critical theory and the analysis of discourses; representations of class, gender, and race. (Lec. 3) Staff
- 557 Studies in British Texts After 1900 (I or II, 3) Modern, contemporary, and postmodern cultural texts; e.g., literary and nonliterary writings, drama, colonial and European cultural relations, film, theory, and cultural studies of institutional life and other social relations. (Lec. 3) Staff
- 560 Studies in European Texts (I or II, 3) Introduction to the study of European texts in translation. May include different historical periods; literary and nonliterary writings; theory; film; rhetoric; and issues of culture, gender, race, class, and sexuality. (Lec. 3) Staff
- 570 Studies in Postcolonial Texts (1 or 11, 3) Investigation of similarities and differences between nonoccidental and occidental genres; traditions and practices of postcolonial oral, written, and visual cultural forms from Africa, Australia, New Zealand, the Americas, India, Ireland, and Scotland. (Lec. 3) S/U only. Staff
- 578 Problems in Milton (II, 3) Emphasis on the major poetic works. (Lec. 3) Next offered spring 1997. Staff
- 590 Selected Topics (I or II, 1-3) Selected topics in American and British literature and topics of special interest not covered by traditional de-

- partment offerings, (Independent Study) Pre: graduate standing or permission of instructor. Next offered spring 1996. Staff
- 595 Master's Project (I or II, 1-6) Number of credits to be determined each semester in consultation with the major professor or director of graduate studies. S/U only. Staff
- All 600-level (seminar) courses require graduate standing or permission of instructor. Courses include: specialized topics, intensive readings, occasional lectures, and frequent presentation of ongoing research by students. A substantial research project is required. May be repeated if emphasis changes.
- 601 Seminar in Creative Writing (1 or 11, 3) Seminar for advanced students under supervision of a staff member arranged to suit individual project requirements of students. (Seminar) Staff
- 605 Seminar in Genres (1 or 11, 3) In-depth study of a single or several genres and/or subgenres, such as epic, drama, or horror film. (Seminar) Staff
- 610 Seminar in Historical Periods (1 or 11, 3) Selected topics of relevance for historical periods. Periods emphasized are medieval, sixteenth- and seventeenth-century British, eighteenth- and nineteenth-century British, North American, and postcolonial. (Seminar) Staff
- 615 Seminar in Authors (I or II, 3) In-depth and critical study of selected works of one or two authors from any historical period, genre, or medium: theories and traditions of authorship: authorship and gender. (Seminar) Staff
- 620 Seminar in Culture and Discourse (I or II, 3) Contrasting theoretical conceptions of culture, discursive practices, hegemony, the public and private spheres, and related concerns; may cross any historical formation or period. (Semi-
- 625 Seminar in Media (1 or II, 3) Critical and theoretical conceptions of one or more media across any historical formation or period. (Seminar) Staff
- 630 Seminar in Canons (1 or II, 3) Critical and theoretical conceptions of canons and canonicity, including emerging or revisionist canons. (Seminar) Staff
- 635 Seminar in Subjectivities (1 or II, 3) Critically investigates class, race, gender, sexuality, and/or other subject positions as they are constructed by literary or other media. Might emphasize reading and writing communities, form and ideology, or identity politics. (Seminar) Staff

- 640 Seminar in Interdisciplinary Studies (I or II, 3) Critically investigates the formation of disciplines and the implications of their intersections; e.g., theory, practice, and politics of literature and the visual arts, music, medicine, jurisprudence, ethnography, psychology, science, economics, (Seminar) Staff
- 645 Seminar in Rhetoric and Composition (I or II, 3) Critical and theoretical conceptions of rhetoric and rhetoricality with varying historical periods and/or connections to cultural studies, literature, and composition studies. (Seminar) Staff
- 650 Seminar in Critical Theory (1 or 11, 3) Indepth study of one or several critical theories such as psychoanalytic, feminist, postcolonial, and cultural studies. (Seminar) Staff
- 660 Seminar in Special Topics (I or II, 3) Topics of'special interest not covered by other offerings. (Seminar) Staff
- 690 Independent Graduate Study (1 or 11, 1–6) Number of credits is determined each semester in consultation with the major professor, director of graduate studies, and chairperson. Staff
- 691, 692 Independent Graduate Study (I or II, 3 each) Advanced study of an approved topic under the supervision of a staff member. (Independent Study) Staff
- 699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

English Language Studies (ELS)

Acting Director: Ronesi

- 112 English as a Second Language I (I and II, 3) Equivalent to WRT 101, but restricted to students whose mother tongue is not English who need special assistance in expressing themselves in English. Intermediate level. (Lec. 3) Staff (Cw)
- 122 English as a Second Language II (I and II, 3) Continuation of 112 for foreign students demonstrating need. Advanced level. (Lec. 3) Staff (Cw)
- 200 English Language Fellows Training Course (I and II, 3) Principles and practice of learning a foreign language in small collaborative groups. A training course for proficient speakers of English who have been admitted to the English Language Fellows Project. (Lec. 3) Pre: admission to the English Language Fellows Project. Staff

201 Content-Based English Language Studies (I and II, 1) Small tutorial sections, taken concurrently with other courses through the English Language Fellows Project, for nonnative speakers who wish to continue studying English while taking other courses. (Lab. 2) Pre: permission of English Language Fellows Project director. Maximum of 3 credits each semester; may be repeated for a total of 12 credits. Ronesi

Entomology (ENT)

Chairperson: Professor Hull (Plant Sciences)

- 385 (or ZOO 381) Introductory Entomology (1, 3) Introduction to the diverse components of entomology, emphasizing basic principles of insect morphology, physiology, behavior, and ecology. Current topics in insect biodiversity and management strategies. (Lec. 3) Pre: BOT 111 or BIO 101 and ZOO 111 or BIO 102, or equivalent. Concurrent enrollment in 386 required for major credit in zoology. LeBrun
- 386 (or ZOO 382) Introductory Entomology Laboratory (1, 1) Insect structure, function, and systematics with field studies in ecology, survey, and collection of beneficial and pest insects in their natural environment. (Lab. 3) Pre: 385 or concurrent enrollment in 385. LeBrun and Casagrande
- 529 Systems Science for Ecologists (1, 3) Concepts and techniques for computer analysis and simulation of complex biological systems. (Lec. 3) Pre: MTH 141, BOT 262, or permission of instructor. Logan
- 533 Graduate Writing in Life Sciences (II, 3) Graduate writing skills for the life and environmental sciences; writing and editing journal articles, proposals; rhetorical analysis of scientific writing. (Lec. 2, Lab. 2) Pre: WRT 101 or equivalent or permission of instructor. Graduate standingor senior status. Logan and Vaughn
- 550 Insect Taxonomy and Systematics (1, 3) External morphology of insects and taxonomy of major families. (Lec. 2, Lab. 2) Pre: 385. In alternate years. Next offered fall 1995. Alm
- 555 Insect Pest Management (II, 3) Evaluation of past and present pest-control strategies in light of insect ecology. Development of pestmanagement systems emphasizing biological control, resistant plants, and ecosystem redesign. (Lec. 3) Pre: PLS 200 or ENT 385 or permission of instructor. Casagrande
- 561 Aquatic Entomology (1, 3) Biology of insects in aquatic environments, including systematics, morphology, and ecology. Field trips em-

phasize relations between species and habitat and the role of insects in aquatic management programs. (Lec. 2, Lab. 3) Pre: 385 or permission of instructor. LeBrun and Logan

- 571 (or MIC 571) Insect Microbiology (II, 3) A two-part investigation of insect-microbe associations, concentrating on the comparative pathobiology of microbial agents in the insect host and the transmission of plant disease organisms by the insect vectors. (Lec. 3) Pre: 385 and MIC 211, or permission of instructor. In alternate years. Next offered 1996-97. LeBrun
- 591, 592 Special Problems in Entomology (/ and II, 1-3 each) Advanced independent research projects supervised by members of the research staff and unrelated to thesis research. Projects developed to meet individual needs. (Independent Study) Pre: permission of chairperson. Staff
- 599 Master's Thesis Research (I and II, 1-6) Number of credits determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit only. Staff

Film Studies

Coordinator: Professor Kunz

Art

215 Filmmaking I

316 Filmmaking II

Art History 374 Topics in Film

300 Literature into Film 346 American Film Classics

358 Recent America in Film

Italian

315 Italian Cinema

In addition, special topics in film studies are offered through AAF 300 Special Topics in African and Afro-American Studies (AAF 300H Black Images in Film) and ART 303 Topics in Studio (ART 303H Video Art).

Finance (FIN)

Chairperson: Associate Professor Dash (Finance and Insurance)

301 Financial Management (I and II, 3) An analysis of the investment and financing issues facing domestic and multinational business firms. (Lec. 3) Pre: ECN 201, ACC 202, and BAC

- 202, or permission of instructor. Proficiency test available. Staff
- 322 Security Analysis (I and II, 3) Problems in investing funds from the point of view of individual and institutional investors. Particular attention is given to analysis of current investment theories and international implications. (Lec. 3) Pre: credit or concurrent enrollment in 301. Staff
- 331 Financial Institutions and Markets (I and II. 3) Comprehensive analysis of financial institutions and the markets in which they operate. Emphasis on the internal operations of the institutions. (Lec. 3) Pre: ECN 201, ACC 202, and BAC 202, or permission of instructor. Staff
- 341 Fundamentals of Real Estate (1 or 11, 3) Analysis of real estate principles. An examination of land utilization, valuation, financing techniques, urban development, property rights, markets, and government regulation. (Lec. 3) Pre: ECN 201. Staff
- 401 Advanced Financial Management (I or II, 3) Intensive research on selected current topics relating to the financial management of the firm. Extensive use of the case method. (Lec. 3) Pre: 301 or permission of instructor. Not for graduate credit for students in the College of Business Administration. Staff
- 420 Speculative Markets (I or II, 3) Examination of the concepts of forward pricing and its applications to the area of commodity and financial futures and options. (Lec. 3) Pre: 301 or permission of instructor. Staff
- 425 Portfolio Theory and Management (I or II, 3) Examination of portfolio theory and current portfolio management practices from the individual and institutional view. Techniques for portfolio building, management, and performance evaluation are discussed. (Lec. 3) Pre: 322 or permission of instructor. Not for graduate credit for students in the College of Business Administration. Staff
- 433 Bank Financial Management (1 or 11, 3) Nature of the financial decisions facing the management of an individual bank, Current bank financial practices, research, and appropriate banking models considered. (Lec. 3) Pre: 301, 331, or permission of instructor. Not for graduate credit for students in the College of Business Administration. Staff
- 441 Financial Theory and Policy Implications (1 or II, 3) Examination of the determinants of long-run financial success of the firm. Includes a study of how the capital budgeting process is linked to capital structure management. (Lec. 3) Pre: 301. Not for graduate credit. Staff

- 452 Multinational Finance (I or II, 3) Methods of financing multinational corporations. Foreign exchange, translation of financial statements, multinational funds flow and international liquidity, international financial reporting and tax policy, international money, stock, and bond markets. (Lec. 3) Pre: 301 or permission of instructor. Not for graduate credit for students in the College of Business Administration. Staff
- 460 Basic Managerial Economics (1 or 11, 3) Introduction to the classic theories of demand. production, and cost management in the context of modern financial theory. Includes empirical model building using microcomputers. (Lec. 3) Pre: 301. Not for graduate credit. Staff
- 491, 492 Directed Study (I and II, 1-3 each) Directed readings and research work involving financial problems under the supervision of members of the staff. Plan of study required. (Independent Study) Pre: permission of instructor. Not for graduate credit for students in the College of Business Administration, Staff
- 493 Internship in Finance (I or II, 3) Approved, supervised work experience with participation in management and problem solving related to finance. Fifteen working days (or 120 hours). (Practicum) Pre: junior standing and proposal approved by the College of Business Administration. May be repeated for a maximum of 6 credits. Not for graduate credit. S/U only. Staff
- 601 Financial Management (I and II, 4) Functions and responsibilities of financial managers. Examination of financial issues, both internal to the firm and arising from interaction with the financial system. Financial statement analysis, structure, valuation, markets, capital budgeting, working capital. (Lec. 4) Pre: ACC 610, ECN 590, BAC 520 and 530. Staff
- 602 Advanced Financial Management (I or II, 3) Case studies and selected readings emphasizing the application of financial theory and analytical techniques to financial management. (Lec. 3) Pre: 601 or equivalent. Staff
- 622 Security and Investment Analysis (I or II, 3) Analysis of the problems of investing funds and managing investments. Use of the latest investment theories and their implementation via quantitative techniques will be explored. (Lec. 3) Pre: 601 or equivalent. Staff
- 625 Advanced Portfolio Theory and Security Analysis (1 or 11, 3) An examination of advanced theories and practices in portfolio building and maintenance. Issues related to security price behavior are also examined. (Seminar) Pre: 601 or equivalent. Staff

- 633 Depository Institutions and Financial Management (I or II, 3) Study of the financial decisions facing the management of depository institutions. Current financial practices and problems explored. Models for bank managers will be considered. (Lec. 3) Pre: 601 or equivalent. Staff
- 641 Advanced Financial Theory (I or II, 3) Analysis of the theoretical framework for corporate decision making related to financial planning, capital budgeting decisions, dividend policy, and capital structure decisions. Emphasis on current research developments. (Seminar) Pre: 601 or equivalent. Staff
- 652 Advanced International Financial Management (I or II, 3) Analysis of issues relevant to the international financial manager. The financial operations of multinational enterprises are examined through both the theoretical and the case approach. (Seminar) Pre: 601 or equivalent. Staff
- 660 Managerial Economics (I and II, 3) The applications of economic theory and methodology to business problems. (Lec. 3) Pre: 601, MSI 600, 620, and 640. Staff
- 671 Seminar in Finance (I or II, 3) Independent research. Individual topics based on readings and research interests of the students. (Seminar) Pre: 601. Staff
- 691, 692 Directed Study in Finance (I and II, 1-3 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. Staff
- 693 Internship in Finance (I and II, 3) Participation in management and/or problem solving under the supervision and guidance of a sponsoring agency with evaluation by the College of Business Administration. (Practicum) Pre: proposal acceptance by College of Business Administration, no previous internship credit, and graduate standing. S/U credit. Staff
- 697 Doctoral Research Seminar (1 and 11, 3) Provides a rigorous analysis of current research questions and research techniques used to address those questions in the academic discipline. Recent developments and current issues addressed. (Seminar) Pre: enrollment in Phase II of the Ph.D. program in business administration. Staff
- 699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: enroll-

ment in Phase III of the Ph.D. program in business administration. S/U credit.

Fisheries Science and Technology (FST)

Chairperson: Professor Nippo (Fisheries, Animal and Veterinary Science)

- 201 Health Emergencies at Sea and Distress Communications (II, 3) First-response and continuing medical aid at sea. The International Medical Code. Use of radio for emergency and extended treatment. BLS cardiopulmonary resuscitation certification. (Lec. 3) Staff
- 231 General Seamanship and Marine Safety (II, 3) Principles and practices of seamanship. Watch standing. Routine and emergency evolutions. Basic fiber and wire rope splicing. Fire prevention, firefighting, and fire safety. Real fires will be fought. (Lec. 2, Lab. 3) Staff
- 315 Living Aquatic Resources (II, 3) Survey of major aquatic resource groups; life histories, distribution, and exploitation of representative finfishes, mollusks, and crustacea in major fisheries ecosystems; management practices and patterns of fisheries development. (Lec. 3) Pre: 200 and ZOO 111 or at least one semester of general zoology. Recksiek
- 321 World Fishing Methods (II, 3) Survey of the fish-catching methods of the world; methods of fish detection; development of the basic techniques used in fishing gear construction and maintenance. (Lec. 3) Pre: 200 or permission of instructor. DeAlteris
- 341 Marine Propulsion Systems (I, 4) Detailed study of marine propulsion systems including gasoline, diesel, and steam. Emphasis on the principles and practices of construction, operation, maintenance, and testing. (Lec. 3, Lab. 3) Wing
- 342 Marine Auxiliary Systems (II, 4) Detailed study of ship's auxiliary systems, including AC and DC electrical generating and distribution systems, the application of hydraulics to operate deck machinery and steering systems, and refrigeration systems used aboard ship. (Lec. 3, Lab. 3) Wing
- 343 Vessel Repair and Maintenance (II, 3) Indepth study of the design, construction, and repair of vessels made of wood, fiberglass, and metal. Emphasis on the use of each material, its comparative cost, and good maintenance techniques. (Lec. 2, Lab. 3) Wing

- 391, 392 Special Problems and Independent Study (I and II, 1-3 each) Special work to meet individual needs of students in various fields of fisheries and marine technology. (Independent Study) Staff
- 415 Fishery Science (1, 3) Classification of resource groups, fishing methods, fisheries mensuration, biology of aquatic resource animals, fisheries ecology, population analysis, aquatic resource management, fish and shellfish farming. (Lec. 2, Lab. 3) Pre: 315. Recksiek
- 421 Design of Fish Capture Systems (1, 3) Detailed study of the design considerations and methods of construction of specific representative commercial and scientific sampling fish capture gear. Full-scale and model nets are designed, constructed, and tested. (Lec. 2, Lab. 3) Pre: 321 or permission of instructor. DeAlteris
- 510 Applied Problems in Marine Fisheries Ecology (1, 3) A study of the interaction between the marine environment and the fisheries, the effects of the environment on individual fish, the life histories of fish, fish behavior, and fish migration. (Lec. 2, Lab. 3) Pre: permission of instructor. DeAlteris
- 516 Early Life History of Aquatic Resource Animals (II, 3) Biology and ecology of juvenile and planktonic commercially important species; dynamics of reproduction, fecundity, growth, distribution, and behavior as modulated by the physical environment; identification, enumeration, and sampling. (Lec. 2, Lab. 3) Pre: 415 and STA 308. Recksiek
- 521 Evaluation of Fish Capture System (II, 3) Evaluation of fish capture system behavior and performance using empirical, theoretical, model scaling, and statistical analysis techniques. Field and laboratory measurement procedures. (Lec. 2, Lab. 3) Pre: 421 or permission of instructor. **DeAlteris**
- 591, 592 Special Problems (I and II, 1-3 each) Advanced work under the supervision of a staff member arranged to suit individual needs of students in various fields of fisheries and marine technology. (Independent Study) Pre: graduate standing or permission of chairperson. Staff

Food Science and Nutrition (FSN)

Chairperson: Professor Traxler

110 Introduction to Dietetics (II, 1) Description of the educational and experiential requirements of a registered dietitian. Career opportunities discussed. Designed for students entering the dietetics major. (Lec. 1) English

- 207 General Nutrition (I and II, 3) Fundamental concepts of the science of nutrition with application to the individual, the community, and the world. Proficiency test available. (Lec. 3)
- 236 Computer Applications in Food Science and Nutrition (1, 2) Basic computer operation and the use and comparison of microcomputer software programs in food science and nutrition. (Lec. 1, Lab. 2) Pre: 207 and 237. English
- 237 Introductory Food Science (1, 3) Survey of basic principles of food science and technology. Proficiency test available. (Lec. 3) Rand
- 276 Food, Nutrition, and People (II, 3) Practical applications of nutrition policy. Current issues in the socioeconomic, cultural, and psychological influences on food and nutrition behavior. (Lec. 3) Pre: 207 and 237. Staff
- 337 Applied Food Science (II, 3) Application of the basic principles of food science. Physical and chemical changes in foods during processing, storage, and preparation. Laboratory application including assessment of food quality. (Lec. 2, Lab. 3) Pre: 237, CHM 124 and 126. Rand
- 347 Nutritional Evaluation of Food Processing (II, 3) Effect of processing, from origin to consumption, upon the nutrient content of food. Emphasis on relationship between food processing and nutrient retention and availability. (Lec. 3) Pre: 207, 237, and CHM 124. Staff
- 375 Food Service Management I (1, 3) Administrative responsibilities in planning, organizing, staffing, leading, and evaluating foodservice systems. Emphasis on menu planning, purchasing, and food cost control. (Lec. 3) Pre: 207 and 237. English
- 376 Food Service Management II (II, 4) Administrative responsibilities in planning, organizing, staffing, leading, and evaluating foodservice systems. Emphasis on food production, staffing, and labor cost control. Experience in a foodservice facility. (Lec. 3, Lab. 2) Pre: 375. English
- 378 Sensory Evaluation of Foods (1, 3) Nature of the sensory response; chemistry of compounds responsible for flavor and odor; measurement of taste, odor, color, and texture; design and methodology of panel testing. (Lec. 2, Lab. 2) Staff
- 386 Food Sanitation (II, 3) Principles of sanitation as applied to the foodservice and foodprocessing industry. Emphasis on bacteria and other organisms causing food-borne-illness, pest control, sanitation, and safe food handling. (Lec.

- 3) Pre: 237, MIC 201, or permission of instructor. Constantinides
- 394 Nutrition in the Life Cycle I (I, 3) Current issues in maternal and child nutrition with emphasis on nutrient requirements and food habit development; delivery of cost-effective quality nutrition services based on needs assessment, program planning, and evaluation. (Lec. 3) Pre: 276. Staff
- 395 Nutrition in the Life Cycle II (II, 3) Current issues in nutrition for the adolescent and aging with emphasis on nutrient requirements related to physiological changes; screening initiatives; program development to reduce risk of nutrition-related diseases. (Lec. 3) Pre: 394. Staff
- 410 Senior Seminar in Dietetics (1, 1) Current issues in the field of dietetics. Topics include evaluation of journal articles, registration, licensing, and certification; cost-effectiveness of nutrition services. (Seminar) Pre: 395 and senior standing. Not for graduate credit. English
- **421 Food Analysis** (1, 4) Principles and procedures for the chemical and physical analysis of foods. Emphasis on the determination of common food constituents and the instrumentation for their analysis. (Lec. 1, Lab. 6) Pre: 431. Constantinides
- 422 (or MIC 422) Biotechnology of Industrial Microorganisms (II, 3) Application of microorganisms to industrial processes. Culture handling and strain development. Regulation and control of fermentation products. (Lec. 3) Pre: BCH 311 and an advanced course in microbiology, or permission of instructor. In alternate years. Next offered fall 1995. Traxler
- 431 Biochemistry of Food (1, 3) Introduction to the chemistry and biochemistry of the essential components common to foods of plant and animal origin. (Lec. 3) Pre: BCH 311 or equivalent.
- 432 Food Processing (II, 3) Changes involved in behavior of foods in unit operations such as fermentation, canning, chilling, freezing, dehydration, and concentration for processing and preservation. (Lec. 2, Lab. 3) Pre: 431 and MIC 211. Rand
- 433 Food Quality (II, 3) Technological problems of procurement, manufacture, transportation, grading, packaging, and storage of food products. Field trips required. (Lec. 2, Lab. 3) Pre: 431 and MIC 211. Staff
- 434 Marine Food Processing (II, 4) Theory and application in processing of finfish, shellfish, and seaweed from harvesting to product develop-

953 Dietetics Seminar: Foodservice Management (I and II, 1-2) Discussion of current topics in foodservice management related to supervised experience. Limited to students enrolled in the Rhode Island AP4 Program, (Seminar) Greene

French (FRN)

Section Head: Associate Professor Morello

- 101 Beginning French I (I and II, 3) Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior French is required. Staff (F)
- 102 Beginning French II (I and II, 3) Continuation of 101. (Lec. 3) Pre: 101 or equivalent. Staff (F)
- 103 Intermediate French I (I and II, 3) Development of facility in reading texts of moderate difficulty: supplemented by further work in grammar, conversation, and composition. (Lec. 3) Pre: 102 or 131 or equivalent. Staff (F)
- 104 Intermediate French II (I and II, 3) Continuation of 103. (Lec. 3) Pre: 103 or equivalent. Staff (F)
- 105 Basic Conversation (I and II, 1) Practice in basic French conversational skills. (Lec. 1) Pre: credit or concurrent enrollment in 103 or 104. May be repeated once for a maximum of 2 credits.
- 131 Refresher Course in French (1 and 11, 3) Rapid one-semester review of beginning French structures and vocabulary. For students with one or two years of high school French who are not ready for 103 or higher level. (Lec. 3) Pre: one or two years of precollege French or permission of section head. Not open to students with credit in 101 or 102. Not for major credit in French, Staff (F)
- 205, 206 Conversation and Composition (I and II, 3 each) Comprehension of spoken French; speaking with ease and an acceptable accent on assigned topics; oral reports on articles read in newspapers and periodicals; and frequent written compositions. (Lec. 3) Pre: 104 or equivalent. Staff
- 301, 302 The Civilization of France I, II (I and II, 3 each) Geographical, historical, economic, social, and aesthetic factors contributing to the cultural development of France. (Lec. 3) Pre: 206 for 301, 301 for 302, or permission of section head. Recommended for French majors in general teacher education. Staff

- 305 Composition (J. 3) Writing of literary French. Frequent compositions and critiques with emphasis on the stylistic devices. Recommended for those concentrating in French. (Lec. 3) Pre: 206 or equivalent. Staff
- 306 Oral Expression in French (II, 3) Discussion, short speech making, pronunciation, everyday vocabulary, and improvement of conversation. Matters of current interest in French selected by instructor and students. (Lec. 3) Pre: 206 or equivalent. Staff
- 327 Survey of French Literature from the Middle Ages to 1789 (1, 3) Survey of major writers and literary movements of French literature from the Middle Ages to 1789. Introduction to poetry and drama as genres. Explication de texte and short papers. (Lec. 3) Pre: 206 or permission of instructor. Staff (A)
- 328 Survey of French Literature from 1789 to Present (II, 3) Survey of major writers and literary movements of French literature from 1789 to present times. Introduction to the novel as genre. Explication de texte and short papers. (Lec. 3) Pre: 206 or permission of instructor. Staff (A)
- 391 Literature to 1789 in Translation (I and II. 3) Major developments in French literature from the Middle Ages through 1789. Reading in translation of selected literary works from representative authors. (Lec. 3) Not for major credit in French. Kuhn (A)
- 392 Nineteenth-Century Literature in Translation (I or II, 3) Reading in translation of selected literary works from representative nineteenthcentury authors. (Lec. 3) Not for major credit in French. Kuhn (A) (F)
- 393 Twentieth-Century Literature in Translation (I or II, 3) Reading in translation of selected literary works from representative twentiethcentury authors. (Lec. 3) Not for major credit in French. Kuhn (A) (F)
- 394 Literary Topics in Translation (1 or 11, 3) Selected topics in French literature in translation. (Lec. 3) Not for major credit in French. Staff
- 402 French Phonetics (II, 3) Introduction to articulatory phonetics, phonetic notation, and phonetic transcription. Rudiments of recognizing and reproducing French intonation patterns. Laboratory in phonetics and intonation. (Lec. 3) Pre: 205 or permission of instructor. Rogers
- 411 Medieval Literature (1, 3) Representative works of the late eleventh century through the fourteenth century. (Lec. 3) Pre: 327 or 328 or permission of instructor. Rogers

- 433 Seventeenth-Century Literature (II, 3) General survey of the writers of the period including Corneille, Moliere, Racine, Pascal, and the Moralistes. (Lec. 3) Pre: 327 or 328 or permission of instructor, Morello
- 443 Eighteenth-Century Literature (1, 3) Principal literary movements as illustrated by Voltaire, Diderot, Rousseau, and other leading writers. (Lec. 3) Pre: 327 or 328 or permission of instructor. Rothschild
- 453 Nineteenth-Century Literature Until 1848 (1, 3) General survey of poets and prose writers of the period including the major Romantics (Lamartine, Vigny, Hugo, Musset, and novelists such as Stendhal and Balzac). (Lec. 3) Pre: 327 or 328 or permission of instructor. Touloudis
- 454 Nineteenth-Century Literature Since 1848 (II, 3) General survey of poets and prose writers of the period including the major Realists (Flaubert, Zola) and Symbolists (Baudelaire, Verlaine, Rimbaud). (Lec. 3) Pre: 327 or 328 or permission of instructor. Chartier
- 461 Twentieth-Century Theatre (1, 3) Representative dramatists. (Lec. 3) Pre: 327 or 328 or permission of instructor. Waters
- 465 Twentieth-Century Prose (1, 3) Major prose works of this period including those of Proust, Gide, Mauriac, Colette, Sartre, Camus, the new novelists, and others. (Lec. 3) Pre: 327 or 328 or permission of instructor. Kuhn
- 473 French Canadian Literature (1, 3) Early historical and biographical works, but primarily the novel, poetry, and theatre of the twentieth century. (Lec. 3) Pre: 327 or 328 or permission of instructor. Chartier
- 474 Black Literature in French (1, 3) Authors of Africa and the Diaspora; includes Camara, Cecaire, Dadie, Senghor. (Lec. 3) Pre: 327 or 328 or permission of instructor. Hammadou
- 480 Business French (I or II, 3) Study of concepts and terminology relating to the French business world. (Lec. 3) Pre: junior standing, credit or concurrent enrollment in at least one 300-level French language course. Morello
- 497, 498 Directed Study (I and II, 3 each) For the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of a project by a staff member and approval of section head. Staff
- 501 Advanced Composition (II, 3) Stylistics to prepare undergraduate and graduate French majors to write expository French prose. (Lec. 3) Pre: graduate standing or permission of instructor. In alternate years. Staff

953 Dietetics Seminar: Foodservice Management (I and II, 1-2) Discussion of current topics in foodservice management related to supervised experience. Limited to students enrolled in the Rhode Island AP4 Program. (Seminar) Greene

French (FRN)

Section Head: Associate Professor Morello

- 101 Beginning French I (I and II, 3) Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior French is required. Staff (F)
- 102 Beginning French II (I and II, 3) Continuation of 101. (Lec. 3) Pre: 101 or equivalent. Staff (F)
- 103 Intermediate French I (I and II, 3) Development of facility in reading texts of moderate difficulty; supplemented by further work in grammar, conversation, and composition, (Lec. 3) Pre: 102 or 131 or equivalent. Staff (F)
- 104 Intermediate French II (I and II, 3) Continuation of 103. (Lec. 3) Pre: 103 or equivalent. Staff (F)
- 105 Basic Conversation (I and II, 1) Practice in basic French conversational skills. (Lec. 1) Pre: credit or concurrent enrollment in 103 or 104. May be repeated once for a maximum of 2 credits.
- 131 Refresher Course in French (I and II, 3) Rapid one-semester review of beginning French structures and vocabulary. For students with one or two years of high school French who are not ready for 103 or higher level. (Lec. 3) Pre: one or two years of precollege French or permission of section head. Not open to students with credit in 101 or 102. Not for major credit in French. Staff (F)
- 205, 206 Conversation and Composition (I and II, 3 each) Comprehension of spoken French; speaking with ease and an acceptable accent on assigned topics; oral reports on articles read in newspapers and periodicals; and frequent written compositions. (Lec. 3) Pre: 104 or equivalent. Staff
- 301, 302 The Civilization of France I, II (I and II, 3 each) Geographical, historical, economic, social, and aesthetic factors contributing to the cultural development of France. (Lec. 3) Pre: 206 for 301, 301 for 302, or permission of section head. Recommended for French majors in general teacher education. Staff

- 305 Composition (1, 3) Writing of literary French. Frequent compositions and critiques with emphasis on the stylistic devices. Recommended for those concentrating in French. (Lec. 3) Pre: 206 or equivalent. Staff
- 306 Oral Expression in French (II, 3) Discussion, short speech making, pronunciation, everyday vocabulary, and improvement of conversation. Matters of current interest in French selected by instructor and students. (Lec. 3) Pre: 206 or equivalent. Staff
- 327 Survey of French Literature from the Middle Ages to 1789 (1, 3) Survey of major writers and literary movements of French literature from the Middle Ages to 1789, Introduction to poetry and drama as genres. Explication de texte and short papers. (Lec. 3) Pre: 206 or permission of instructor. Staff (A)
- 328 Survey of French Literature from 1789 to Present (II, 3) Survey of major writers and literary movements of French literature from 1789 to present times. Introduction to the novel as genre. Explication de texte and short papers. (Lec. 3) Pre: 206 or permission of instructor. Staff (A)
- 391 Literature to 1789 in Translation (I and II, 3) Major developments in French literature from the Middle Ages through 1789. Reading in translation of selected literary works from representative authors. (Lec. 3) Not for major credit in French, Kuhn (A)
- 392 Nineteenth-Century Literature in Translation (I or II, 3) Reading in translation of selected literary works from representative nineteenthcentury authors. (Lec. 3) Not for major credit in French. Kuhn (A) (F)
- 393 Twentieth-Century Literature in Translation (I or II, 3) Reading in translation of selected literary works from representative twentiethcentury authors. (Lec. 3) Not for major credit in French. Kuhn (A) (F)
- 394 Literary Topics in Translation (1 or 11, 3) Selected topics in French literature in translation. (Lec. 3) Not for major credit in French. Staff
- 402 French Phonetics (II, 3) Introduction to articulatory phonetics, phonetic notation, and phonetic transcription. Rudiments of recognizing and reproducing French intonation patterns. Laboratory in phonetics and intonation. (Lec. 3) Pre: 205 or permission of instructor. Rogers
- 411 Medieval Literature (1, 3) Representative works of the late eleventh century through the fourteenth century. (Lec. 3) Pre: 327 or 328 or permission of instructor. Rogers

- 433 Seventeenth-Century Literature (II, 3) General survey of the writers of the period including Corneille, Moliere, Racine, Pascal, and the Moralistes. (Lec. 3) Pre: 327 or 328 or permission of instructar, Morello
- 443 Eighteenth-Century Literature (1, 3) Principal literary movements as illustrated by Voltaire, Diderot, Rousseau, and other leading writers. (Lec. 3) Pre: 327 or 328 or permission of instructor, Rothschild
- 453 Nineteenth-Century Literature Until 1848 (1, 3) General survey of poets and prose writers of the period including the major Romantics (Lamartine, Vigny, Hugo, Musset, and novelists such as Stendhal and Balzac). (Lec. 3) Pre: 327 or 328 or permission of instructor. Touloudis
- 454 Nineteenth-Century Literature Since 1848 (II, 3) General survey of poets and prose writers of the period including the major Realists (Flaubert, Zola) and Symbolists (Baudelaire, Verlaine, Rimbaud). (Lec. 3) Pre: 327 or 328 or permission of instructor. Chartier
- 461 Twentieth-Century Theatre (1, 3) Representative dramatists. (Lec. 3) Pre: 327 or 328 or permission of instructor, Waters
- 465 Twentieth-Century Prose (1, 3) Major prose works of this period including those of Proust, Gide, Mauriac, Colette, Sartre, Camus, the new novelists, and others. (Lec. 3) Pre: 327 or 328 or permission of instructor. Kuhn
- 473 French Canadian Literature (1, 3) Early historical and biographical works, but primarily the novel, poetry, and theatre of the twentieth century. (Lec. 3) Pre: 327 or 328 or permission of instructor. Chartier
- 474 Black Literature in French (1, 3) Authors of Africa and the Diaspora; includes Camara, Cecaire, Dadie, Senghor. (Lec. 3) Pre: 327 or 328 or permission of instructor. Hammadou
- 480 Business French (I or II, 3) Study of concepts and terminology relating to the French business world. (Lec. 3) Pre: junior standing, credit or concurrent enrollment in at least one 300-level French language course. Morello
- 497, 498 Directed Study (I and II, 3 each) For the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of a project by a staff member and approval of section head. Staff
- 501 Advanced Composition (II, 3) Stylistics to prepare undergraduate and graduate French majors to write expository French prose. (Lec. 3) Pre: graduate standing or permission of instructor. In alternate years. Staff

503 History of the French Language (II, 3) Linguistic development of French from the earliest documents to the present. Gallo-Romance dialects; the spread of French in and beyond Europe. (Lec. 3) Pre: graduate standing or permission of instructor. Rogers

Note: Courses 513-594 include lectures, discussions, readings, individual research, and a research paper.

- 513 Seminar in Medieval Literature (1, 3) Pre: graduate standing or permission of instructor. Staff
- 523 Seminar in Sixteenth-Century Literature (1, 3) Pre: graduate standing or permission of instructor, Rothschild
- 533 Seminar in Seventeenth-Century Literature (I, 3) Pre: graduate standing or permission of instructor. Morello
- 544 Seminar in Eighteenth-Century Literature (II, 3) Pre: graduate standing or permission of instructor. Rothschild
- 554, 555 Seminar in Nineteenth-Century Literature (I and II, 3 each) Pre: graduate standing or permission of instructor. Touloudis and Chartier
- 564 Seminar in Modern Poetry (1, 3) Pre: graduate standing or permission of instructor. Staff
- 565 Seminar in Twentieth-Century Theatre (II, 3) Pre: graduate standing or permission of instructor. Kuhn
- 566 Seminar in Twentieth-Century Prose (1, 3) Pre: graduate standing or permission of instructor. **Toloudis**
- 594 Special Topics (I and II, 3) Group and/or individual investigation of special problems in French language, literature, and civilization: (Independent Study) Pre: acceptance of project by a staff member and permission of chairperson. Staff
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Genetics

Coordinator: Associate Professor Mottinger

Aquacultural Science and Pathology 476 The Genetics of Fish

Botany 352 Genetics 454 Genetics Laboratory 554 Cytogenetics

Microbiology

- 502 Techniques in Microbial and Molecular Genetics
- 552 Microbial Genetics
- 561 Recent Advances in Molecular Cloning

Plant Sciences

- 250 Plant Breeding and Genetics
- 352 General Genetics
- 355 Genetics Laboratory
- 472 Plant Improvement

Zoology

- 203 Introduction to Evolutionary Genetics
- 573 Developmental Genetics
- 579 Advanced Genetics Seminar

Geography (GEG)

Chairperson: Professor Juda (Marine Affairs)

- 100 The Geography of Human Ecosystems (I and II, 3) The evolution of human environments from the Stone Age to the contemporary megalopolis and the emergent world city in terms of man-earth-space-resource relationships. (Lec. 3) Gordon (S)
- 103 Economic Geography (I and II, 3) Surveys the geographic backgrounds of economic activities. Populations and the resources of agriculture, industry, and commerce in terms of their world and regional distribution. (Lec. 3) Marti
- 104 Political Geography (I and II, 3) Pattern of political units throughout the world; special emphasis on boundaries, newly independent nations, and other aspects of political control over territory. (Lec. 3) Staff (S)

Geology (GEL)

Chairperson: Professor Hermes

- 100 Environmental Geology (I and II, 3) Geologic processes and how they affect people; geologic hazards, earthquake impact, shoreline development, offshore oil, waste disposal, water and other resources, nuclear power plant siting. (Lec. 3) Cain and Staff (N)
- 101 Geological Field Trips (1, 1) Field trips to coastal, glacial, and bedrock terrains. The relation of structures and materials to the history of the earth, mineral resources, and our environment. (Lab. 2) In alternate years. Next offered 1995-96, Frohlich
- 102 The Evolution and Extinction of the Dinosaurs (II, 3) General introduction to the dinosaurs. Variety, habits, warm-bloodedness, and extinction discussed. Pterosaurs and bird origins presented. (Lec. 3) Fastovsky (N)

- 103 Physical Geology (I and II, 4) Physical processes on and within the earth; its composition: development and modification of surficial features and their relationships to internal processes; resource and environmental aspects. (Lec. 3, Lab. 2) Cain or Hermes (N)
- 203 Field Geology (1, 3) Emphasis on the development of skills in geologic mapping and the construction of geologic maps. Field trips required. (Lec. 2, Lab. 3) Pre: 100, 103, or permission of instructor. Murray
- 210 Geomorphology (II, 4) Classification of landforms; their development, distribution, and associated geologic processes. Cycles of development of coastal, glacial, and fluvial landforms. Laboratory: landform analysis of topographic maps, aerial photographs, and field studies. (Lec. 3, Lab. 2) Pre: 103 or permission of instructor. Veeger
- 240 Introduction to Paleontology (II, 4) History, methods, nature, and problems. Systematic survey of animal organisms found as fossils with particular emphasis on their morphology, taxonomy, and geologic distribution. (Lec. 3, Lab. 2) Pre: 102 or 103 or ZOO 111 or BIO 102 or permission of instructor. Fastovsky
- 277 Coastal Geologic Environments (II, 3) Geologic processes in coastal environments such as barriers, lagoons, estuaries, bays, and rocky headlands. Impact of coastal geologic hazards such as hurricanes, winter storms, and sea-level rise. Response of society to hazards. Field trips, small-group field project required. (Lec. 3) Pre: 103. Boothroyd
- 301 Geology of Mineral Resources (1, 3) Origin, distribution, extraction, and importance of various mineral resources; energy sources, metals, building and industrial materials, water. Strategic minerals, their world distribution and part played in world affairs. (Lec. 3) Pre: 103 or permission of instructor. Cain
- 320 Hand Sample Mineralogy and Petrology (1, 4) Crystallography and physical properties of minerals related to crystal structure. Composition, classification, genesis, and interpretation of rocks as related to geological occurrence. Emphasis on hand sample identification. (Lec. 2, Lab. 4) Pre: 103, credit or concurrent enrollment in CHM 101 or 103. Hermes
- 321 Optical Petrography and Petrogenesis (II, 4) Continuation of 320, emphasizing optical mineralogy and petrography. Petrogenesis and associations of igneous and metamorphic rocks. (Lec. 2, Lab. 4) Pre: 320, PHY 112 or 214, and credit or concurrent enrollment in CHM 112. Hermes

- 370 Structural Geology (II, 4) Stress and strain relationships as they pertain to rocks. Manifestations of these phenomena in geologic structures and criteria for recognizing them. (Lec. 3, Lab. 2) Pre: 103, 203; PHY 213 and 285 or 111 and 185. Murray
- 401 Ore Deposits (II, 3) Origins of metallic ore deposits; factors localizing deposits; mining methods; uses of metals; environmental effects; discussion of specific metals and mining districts. (Lec. 2, Rec. 1) Pre: 301 or 320 or equivalent or permission of instructor. Next offered spring 1996. Cain
- 421 Geochemistry (1, 3) Introduction to thermodynamics of rock and minerals, stable isotopes, geochronology, and cosmogeochemistry. Emphasis on the geochemistry of igneous and metamorphic rocks. (Lec. 3) Pre: CHM 112, GEL 321, and MTH 132 or 142, or permission of instructor. Murray
- 450 Introduction to Sedimentation and Stratigraphy (1, 4) Principles underlying formation, composition, sequence, and correlation of sedimentary rocks. Methods, procedures, and techniques used to study sedimentary processes, depositional environments, stratigraphic relationships, and stratigraphic correlation. (Lec. 3, Lab. 2) Pre: 321 or permission of instructor. Boothroyd
- 465 Introduction to Geophysics (1, 3) Introduction to physical properties of the earth and application of geophysical exploration techniques. Seismic, gravity, magnetic and electrical field techniques; basic methods of interpretation. (Lec. 2, Lab. 2) Pre: 103, PHY 112 or 214, MTH 132 or 142, or permission of instructor. Frohlich
- 468 Hydrogeochemistry (1, 4) Introduction to the geochemical processes controlling the composition of water in low-temperature environments, including: the carbonate system, mineral equilibria, chemical weathering, and the chemical evolution of groundwater. (Lec. 3, Lab. 2) Pre: CHM 101, 102, 112, 114; GEL 103, 320. Offered in odd-numbered years. Next offered fall 1995. Veeger
- 480 Summer Field Camp (SS, 4-8) Geologic field mapping and principles. (Practicum) Pre: 210, 240, 321, 370, 450 recommended. Course not offered through URI; prior approval of selected camp required by the Department of Geology. Recommended between junior and senior years. Not for graduate credit in geology. Staff
- 483 Hydrogeology (1, 4) Study and interpretation of groundwater flow systems and the inter-

- action between groundwater and the geologic framework, including: groundwater flow, aqueous geochemistry, groundwater resource evaluation, and groundwater in geologic processes. (Lec. 3, Lab. 2) Pre: 103, 210, and MTH 141 or 131, or permission of instructor. Veeger
- 485 (or CVE 485) Engineering Geophysics (II, 3) Field and lab methods of determining physical rock constants such as density, porosity, permeability, electrical conductivity, and seismic velocity, with applications in engineering geology and geotechnical engineering. (Lec. 2, Lab. 2) Pre: 103, MTH 132 or 142, PHY 111 and 185 or 213 and 285, and junior standing, or permission of instructor. In alternate years. Next offered 1996-97. Frohlich and Urish
- 487 Quantitative Geology (II, 3) Introduction to the management and analysis of data in geology using microcomputers. Applications of statistical, graphic, spreadsheet, and other programs to structural geology, geomorphology, petrology, geochemistry, geophysics, and sedimentology. (Lec. 3) Pre: MTH 132 or 142, CSC 201, and senior standing, or permission of instructor. In alternate years. Next offered 1995-96. Frohlich
- 488 Geological Evolution of North America (II. 4) Advanced treatment of the evolution of major sedimentary basins of North America within a tectonic framework. Regional paleoenvironments and paleogeography through time reconstructed from lithofacies and faunas. Ten-day field trip to southern Appalachians. (Lec. 3, Lab. 2) Pre: 450 or permission of instructar. Fastovsky
- 491 Special Topics (I and II, 1-3) Advanced work for undergraduates under the supervision of a faculty member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. Not for graduate credit in geology. Staff
- 499 Senior Thesis (I and II, 3) Independent research. Student selects an area of study and works in close conjunction with a faculty member of his or her choice. (Independent Study) Pre: senior standing and permission of instructor. Not for graduate credit in geology. Staff
- 515 Glacial Geology (1, 3) Investigation of late Cenozoic glaciation including areas with presently existing glaciers. Primary stress on sedimentology and geomorphology of glacial deposits. Field trips in New England area. (Lec. 2, Lab. 3) Pre: 450 or permission of instructor. Boothroyd
- 530 Igneous Petrology (II, 3) Tectonic and chemical basis for igneous phenomena stressing

- the association concept of igneous activity. Evaluation of the criteria used in petrogenetic interpretations. (Lec. 2, Lab. 3) Pre: 321 or permission of instructor. In alternate years. Next offered spring 1996. Hermes
- 531 Metamorphic Petrology (1, 3) Facies concept and other methods of interpreting metamorphic mineral assemblages. Chemical and fabric changes during metamorphism, including principles of structural petrology. (Lec. 2, Lab. 3) Pre: 321 or permission of instructor. In alternate years. Next offered spring 1997. Murray
- 550 Sedimentary Processes (II, 3) Physical and chemical processes of sedimentation with emphasis on fluvial, beach, and estuarine environments. Stress on field applications of theory, with independent project and reading. (Lec. 3) Pre: 450 or permission of instructor. Offered in spring of odd-numbered years. Boothroyd
- 554 Sedimentary Petrology (1, 3) The detailed interpretation of siliciclastic and carbonate fabrics and textures in thin section and hand sample. Emphasizes aspects of diagenesis, including cementation, replacement, recrystallization, pedogenesis, and porosity evolution. Skeletal elements and paleoenvironmental context presented, (Lec. 3) Pre: 240 and 450 or permission of instructor. In alternate years. Fastovsky
- 565 Advanced Interpretation in Applied Geophysics (II, 3) Interpretation of geophysical data using theoretical models. Reflection, refraction, and surface propagation of seismic energy. Computer analysis of gravity and magnetic potential data. DC geoelectrical potential over horizontally stratified medium. (Lec. 2, Lab. 2) Pre: MTH 243, PHY 214, or equivalent course in physics with permission of instructor. Offered in spring of odd-numbered years. Frohlich
- 568 Isotopes in Hydrogeology (II, 3) Use of environmental isotopes in groundwater studies; dating groundwater, delineating flow paths and identifying recharge areas; geochemical evolution of groundwater and assessment of contamination. (Lec. 3) Pre: 483 and 468 or permission of instructor. Offered in even-numbered years. Veeger
- 577 Coastal Geologic Hazards (II, 3) Geologic hazards in the coastal zone and their impact on society. Includes waves, storm-surge, masswasting, and sea-level rise. Geologic effectiveness of engineering structures and management techniques. Emphasis on field study. (Lec. 2, Lab. 3) Pre: 450 or permission of instructor. Offered in spring of even-numbered years. Boothroyd

- **580 New England Geology** (*I*, *3*) Review of the bedrock geology of New England, and its applications for the Appalachian/Caledonides mountain chain and theories of orogenesis. Mandatory field trips. (*Lec. 3*) *Pre: 321, 370, or permission of instructor. Offered in fall of oddnumbered years.* Murray
- **581 Topics in Tectonic Geology** (*I*, *3*) Review of selected topics in continental and oceanic tectonics. (*Sem. 3*) *Pre: permission of instructor. Offered in fall of even-numbered years.* Murray and Fox
- 583 Advanced Hydrogeology (II, 3) Advanced analysis of groundwater systems and the relationship between groundwater and geology. Principles and equations for groundwater flow in complex aquifers, groundwater modeling. Groundwater modeling project. (Lec. 2, Lab. 3) Pre: 483 or 585 and MTH 244 or permission of instructor. Offered in odd-numbered years. Veeger
- 590, 591 Special Problems (I and II, 1–3 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. S/U credit for 591. Staff
- **592** Nonthesis Master's Research (1 and 11, 3) Independent research for fulfillment of research requirement of nonthesis master's degree. Detailed report required. (Independent Study) Pre: permission of chairperson. S/U credit. Staff
- **599 Master's Thesis Research** (*I and II*) Number of credits is determined each semester in consultation with the major professor or program committee. (*Independent Study*) S/U credit.
- 930 Workshop in Geology Topics for Teachers (I and II, 0–3 each) Especially designed for teachers of physical sciences. Basic topics of geology from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification. Staff

Note: For other related courses, see OCG 540, 625, 628, 643, 644, 645, 646, 649, 651, 652, 678, 681; OCE 582, 688; and CVE 581, 585, 587, 588, 677, 681, 682, 687.

German (GER)

Section Head: Professor Grandin

101 Beginning German I (I and II, 3) Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior German is required. Staff (F)

- **102 Beginning German II** (*I and II*, 3) Continuation of 101. (*Lec. 3*) *Pre: 101 or equivalent.* Staff (F)
- 103 Intermediate German I (I and II, 3) Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. (Lec. 3) Pre: 102 or equivalent. Staff (F)
- **104 Intermediate German II** (*I and II*, 3) Continuation of 103. (*Lec. 3*) *Pre: 103 or equivalent*. Staff (F)
- 105, 106 Basic Conversation I, II (I and II, 1 each) 105: Practice in conversational skills. (Lec. 1) Pre: credit or concurrent enrollment in 103. 106: Continued practice in conversational skills. (Lec. 1) Pre: credit or concurrent enrollment in 104. Staff
- 111, 112 Intensive Beginning German (SS, 4 each) Study of the fundamentals of German with special emphasis on listening and speaking skills. (Lec. 4) Pre: 111 or equivalent for 112. Not for major credit in German. Staff
- 113, 114 Intensive Intermediate German (SS, 4 each) Practice in listening and speaking. Development of basic reading and writing skills. Review of grammatical structure. (Lec. 4) Pre: 112 or equivalent for 113; 113 or equivalent for 114. Staff
- 201, 202 Intermediate Conversation I, II (I and II, 1 each) Conversation skills for students who have completed intermediate German. 202: Continuation of 201. (Lec. 3) Pre: 104 or permission of instructor. Staff
- 205, 206 Conversation and Composition (I and II, 3 each) Development of facility in spoken and written German using contemporary writings and topics; special emphasis on general classroom discussion. (Lec. 3) Pre: 104 or equivalent. Staff
- 215, 216 Advanced Conversational German (SS, 4 each) Intensive practice in speaking and listening, with some attention to writing skills. (Lec. 4) Pre: 114 or equivalent. Staff
- **221** Introduction to Business German (*SS*, *1*) Conversational practice in German with emphasis on the acquisition of vocabulary pertinent to international business. (*Lec. 1*) *Pre: 112 or equivalent.* Grandin
- **305** Advanced Conversation (*I*, 3) Intensive practice in spoken German based on matters of current interest in German-speaking countries. (*Lec. 3*) *Pre: 206* or equivalent. In alternate years. Next offered 1995–96. Crossgrove

- **306** Advanced Composition (*II*, 3) Training in various forms of writing by means of frequent compositions and critiques. (*Lec.* 3) *Pre:* 206 or equivalent. In alternate years. Next offered 1995–96. Crossgrove
- 315, 316 Language Study Abroad (I and II, 3–5 each) Credit for advanced language study in a German-speaking country. (Practicum) Pre: 206 or equivalent and permission of section head. Staff
- **327** Introduction to German Studies and Literature (*I or II*, 3) Major developments and figures in German culture, literature, art, and society of the twentieth century. (*Lec. 3*) *Pre: 206 or permission of instructor.* Kirchner
- **328** Introduction to German Cultural History and Literature (*I or II*, 3) Overview of major German cultural developments starting with the "Germany" of the Romans and ending with unification. Significant figures and developments in literature, art, and society. (*Lec. 3*) Pre: 206 (or equivalent) or permission of instructor. Kirchner
- **392** Masterpieces of German Literature (*II*, 3) Literary works in English translation from 1800 to the present. (*Lec. 3*) Not for major credit in German. Staff (A) (F)
- 408 (or LIN 408) The German Language: Past and Present (1, 3) Introduction to the history and present state of the German languages. Study of standard and colloquial German, dialects, Swiss and Austrian variations, language of youth and professions. Analysis of various test types. Tendencies in present-day German. (Lec. 3) Pre: 305 or permission of instructor. Not for graduate credit. Hedderich
- **411 Advanced Technical German** See Engineering 411.
- **421 Business German** (*I and II*, 3) Study of the concepts and terminology of the German language common to the realm of international business. Intended for advanced students of business and German. (*Lec. 3*) Pre: junior standing, credit or concurrent enrollment in 305 and 306. Next offered fall 1996. Hedderich
- 441, 442 German Literature of the Eighteenth Century (I and II, 3 each) Principal literary movements of the century as illustrated by leading writers of the time. (Lec. 3) Pre: 206 or equivalent. 441 is not required for 442. In alternate years. Next offered 1996–97. Grandin
- **452 German Literature of the Nineteenth Century** (*I and II*, 3) Principal literary movements of the century as illustrated by leading writers of the time. (*Lec.* 3) *Pre:* 206 or equivalent. In alternate years. Next offered 1995–96. Staff

485, **486** Special Studies (I and II, 1–3 each) Special topics in German literature not emphasized in other courses. (Seminar) Pre: one semester of German at the 300 level or permission of section head. May be repeated with a change in topic. In alternate years. Next offered 1996-97. Staff

497, 498 Directed Study (I and II, 1-3 each) Designed particularly for the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of project by a staff member and permission of section head. Staff

586 Seminar in German Studies (I, II, and SS, 1-3) Topics in German literature and civilization. (Seminar) Pre: graduate standing or permission of instructor. May be repeated with different topics. Staff

598 Directed Studies (I, II, and SS, 1-3) Individual research on problems of special interest. (Independent Study) Pre: graduate standing, acceptance of project by a staff member, and permission of chairperson. May be repeated with different topics. Staff

987, 988 German Play Production (SS, 1 each) Study and production of a German play or plays. (Workshop) Pre: 215 and 216 or equivalent. Students may enroll concurrently in 485, 486. Staff

Gerontology

Acting Director: Professor P. Clark

Human Development and Family Studies

220 Gerontology: Theory and Application

221 Work with the Aging

420 Human Development During Adulthood

421 Death, Dying, and Bereavement

431 Family and the Elderly

440 Environmental Context of Aging

520 Developmental Issues in Later Life

527 Health Care Policy and the Elderly

529 Practicum Seminar in Gerontology

555 Gerontological Counseling

Consumer Studies 342 Housing for the Elderly

Dental Hygiene

462 Oral Care of the Aged and Medically Compromised

Food Science and Nutrition 395 Nutrition in the Life Cycle II

Human Science and Services 530 Multidisciplinary Health Seminars for the Elderly

Nursing

349 Aging and Health

Physical Education

416 Aging and Leisure

563 Fitness Programs for the Middle-Aged and Elderly

564 Physiology of Aging

Sociology

438 Aging in Society

Greek (GRK)

Chairperson: Professor Grandin (Modern and Classical Languages and Literatures)

101 Ancient Greek I (I, 3) Grammar and syntax of Attic Greek, reading practice. (Lec. 3) Pre: no prior Greek is required. Staff (F)

102 Ancient Greek II (I and II, 3) Continuation of 101. (Lec. 3) Pre: 101 or equivalent. Staff (F)

109, 110 Introduction to Ancient Greek Culture (I or II, 3 each) Aspects of Greek culture: literature, religion, myth, philosophy, art, private life, athletics, archaeology. Readings in English translation. (Lec. 3) Staff (F)

301 Intermediate Greek I (I, 3) Grammer review; readings selected in accordance with students' needs and interests. (Lec. 3) Pre: 102 or equivalent, Suter (F)

302 Intermediate Greek II (II, 3) Readings selected in accordance with interests of students. (Lec. 3) Pre: 301 or permission of instructor. May be repeated for credit with a different topic. Suter (F)

310 Greek Across the Curriculum (| or ||, 1) Reading of original Greek texts and discussion in conjunction with courses throughout the University curriculum. Designed to maintain language skills and to enrich the study of different subjects by texts in the original language. (Lec. 1) Pre: 301 or permission of instructor. Suter, Zeyl, and Hollinshead

497, 498 Directed Study (I or II, 1-6 each) Individual readings and research. (Independent Study) Pre: acceptance of project by staff member and approval of chairperson. May be repeated for credit with a different topic. Suter

Health (HLT)

Co-Chairpersons: Associate Professor O'Leary and Associate Professor Seleen (Physical Education and Health)

123 Foundations of Health (I and II, 3) Development of attitudes and practices that lead to more healthful living. Personal and community health problems are studied, (Lec. 3) Staff (S)

172 First Aid (I and II. 1) Basic instruction and practice in accident prevention and first aid procedure. Students successfully meeting requirements will receive a Standard First Aid Certificate. (Lec. 1, Lab. 1) Not open to students with credit or concurrent enrollment in 272. Staff

272 Advanced First Aid (I and II, 2) Instruction and practice in advanced first aid and emergency care techniques and skills. Fulfills requirements for Red Cross Advanced First Aid Certificate. (Lec. 1, Lab. 2) Seleen

356 Methods and Materials in Health Education (I or II, 3) Curricular materials for school and public health education; evaluation of techniques and current methodology for use in elementary and secondary schools. (Lec. 3)

357 Principles of Community Health (II, 3) Principles of community health with emphasis on problems of health departments, public and private agencies, and schools in the community health education program. (Lec. 3) Pre: 123, 367, or permission of chairperson. Faraone

367 School Health Program (I, 3) Organization of the school health program in relation to the community health program, Emphasis on health instruction, health services, and healthful school environment. (Lec. 3) Faraone

377 Current Health Problems (I or II, 3) Health problems of current importance on an individual, community, national, and international basis. Content application. Solutions to health problems. Includes the school, community, and public health approaches to these problems. (Lec. 3) Pre: 367 or permission of chairperson. Faraone

380 Organization of Community Health Services (I or II, 3) An examination of the health services delivery system in the United States with emphasis on the role and function of state and local health agencies. Agency visits required. (Lec. 3) Pre: 357 or permission of instructor. O'Donnell

391 Directed Study See Physical Education 391.

457 Health and Safety Issues of Consumer

See Consumer Studies 457. 484 Supervised Field Work

See Physical Education 484.

486 Field Experience Seminar See Physical Education 486.

560 Seminar in Health, Physical Education, and Recreation See Physical Education 560.

591 Special Problems See Physical Education 591.

592 Internship See Physical Education 592.

595 Independent Study See Physical Education 595.

599 Master's Thesis Research See Physical Education 599.

Health Services Administration (HSA)

Coordinator: Professor Grubman-Black (B.G.S. Program)

360 Health Services Administration (I or II, 3) Introduction to key concepts and principles in health services administration through both didactic and experiential means. (Seminar) Pre: admission to the B.G.S. program as a health services administration major and a minimum of 60 credits. Staff

380 Introductory Practicum in Health Services Administration (I or II, 3) Didactic and experiential introduction to the delivery of health services including acute care, long-term care, nursing homes, and special services problems such as hepatitis, tuberculosis, and HIV. (Practicum) Pre: admission to the B.G.S. program as a health services administration major and a minimum of 75 credits. Staff

480 Advanced Practicum in Health Services Administration (I or II, 6) An intensive experience in a health care setting selected by the student, combined with class meetings. (Practicum) Pre: admission to the B.G.S. program as a health services administration major and a minimum of 90 credits. Not for graduate credit. Staff

Hebrew (HBW)

Chairperson: Professor Grandin (Modern and Classical Languages and Literatures)

101 Beginning Hebrew I (I or II, 3) Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Hebrew is required. Jagolinzer (F)

102 Beginning Hebrew II (I or II, 3) Continuation of 101. (Lec. 3) Pre: 101 or equivalent. Jagolinzer (F)

103 Intermediate Hebrew I (I and II, 3) Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. (Lec. 3) Pre: 102 or equivalent. Staff (F)

104 Intermediate Hebrew II (I and II, 3) Continuation of 103. (Lec. 3) Pre: 103 or equivalent. Staff (F)

History (HIS)

Chairperson: Professor Briggs

111 History of Ancient Greece and Rome (1, 3) From the Greek and Latin settlements to the Germanic invasions with emphasis on political, social, economic, and aesthetic developments. Includes rise of the Christian church. (Lec. 3) Staff (F) (L)

112 History of Medieval Europe (II, 3) Primarily western Europe. Continuation of 111. Medieval church, feudalism, revival of town life, commerce, industry, and money economy, rise of national states, and development in the arts. (Lec. 3) Staff (F) (L)

113 History of Western Civilization from the Late Middle Ages to 1789 (I and II, 3) Introductory course treating Western civilization in its broadest sense from the late Middle Ages to the French Revolution and the beginnings of industrialization. (Lec. 3) Staff (F) (L)

114 History of Western Civilization Since 1789 (I and II, 3) Continuation of 113. Western civilization of the present time. (Lec. 3) Staff (F) (L)

115 The History of Science to 1800 (1, 3) A survey of the developments of science from Ancient Greece through the Scientific Revolution of the seventeenth and eighteenth centuries. (Lec. 3) Briggs (L)

116 The History of Science Since 1800 (II, 3) A survey of the developments of science in society over the last two centuries. (Lec. 3) Briggs (L)

118 Women in European History (II, 3) Attitudes toward women, their role in society, women's work, and the feminist movement. Emphasis on nineteenth and twentieth centuries with background material from earlier periods. (Lec. 3) Staff (L)

123 Modern British Civilization (1 or II, 3) An introduction to British culture in the nineteenth and twentieth centuries. Surveys of the impact of the Industrial Revolution, political developments, and social change; also Britain's role in the world, Ireland, and the world wars. (Lec. 3) Gutchen (F) (L)

125 Introduction to German History (1 or 11, 3) A topical introduction to traditions and movements which have shaped German history in the modern era. (Lec. 3) Honhart (F) (L)

132 Introduction to Russian and Soviet History (1 or 11, 3) Selected topics in the development of Russian civilization since the ninth century. (Lec. 3) Thurston (F) (L)

141 History of the United States to 1877 (I or II, 3) Colonial and Revolutionary periods, and economic, social, and political development of the United States through the Civil War and Reconstruction. (Lec. 2, Rec. 1) Staff (L)

142 History of the United States Since 1877 (I or II, 3) General social, economic, and political development from 1877 to the present. (Lec. 2, Rec. 1) Staff (L)

145 Women in American History (1 or 11, 3) American women from the colonial period to the present. Emphasis on institutionalization of the Victorian ideal, women in the labor force, and origins of liberation ideology. (Lec. 3) Strom (L)

150 (or AAF 150) Introduction to Afro-American History (1 or II, 3) Survey of Afro-American history from African origins to the current racial confrontation. (Lec. 3) Weisbord (L)

171 East Asian Culture and History (1 or 11, 3) Introduction to the culture and history of East Asia. Emphasis on the literary, artistic, and philosophical traditions of East Asia, especially those aspects which relate to and influence contemporary developments. (Lec. 3) Kim (F) (L)

176 The Islamic Middle East: From Muhammad to the Mongols (I and II, 3) History of the Islamic Middle East from the rise of Islam in the seventh century through the Mongol conquests in the thirteenth century. (Lec. 3) Staff (F) (L)

177 The Islamic Middle East: From the Mongols to Modern Times (I or II, 3) History of the Islamic Middle East from the Mongol invasions of the thirteenth century to the present. Includes the Ottoman Empire, the impact of European colonialism, the rise of nationalism, the Arab-Israeli conflict, and the Iranian revolution. (Lec. 3) Staff (F) (L)

- 580 New England Geology (1, 3) Review of the bedrock geology of New England, and its applications for the Appalachian/Caledonides mountain chain and theories of orogenesis. Mandatory field trips. (Lec. 3) Pre: 321, 370, or permission of instructor. Offered in fall of oddnumbered years. Murray
- 581 Topics in Tectonic Geology (1, 3) Review of selected topics in continental and oceanic tectonics. (Sem. 3) Pre: permission of instructor. Offered in fall of even-numbered years. Murray and Fox
- 583 Advanced Hydrogeology (II, 3) Advanced analysis of groundwater systems and the relationship between groundwater and geology. Principles and equations for groundwater flow in complex aguifers, groundwater modeling. Groundwater modeling project. (Lec. 2, Lab. 3) Pre: 483 or 585 and MTH 244 or permission of instructor. Offered in odd-numbered years. Veeger
- 590, 591 Special Problems (I and II, 1-3 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. S/U credit for 591. Staff
- 592 Nonthesis Master's Research (I and II, 3) Independent research for fulfillment of research requirement of nonthesis master's degree. Detailed report required. (Independent Study) Pre: permission of chairperson, S/U credit, Staff
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 930 Workshop in Geology Topics for Teachers (I and II, 0-3 each) Especially designed for teachers of physical sciences. Basic topics of geology from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification. Staff

Note: For other related courses, see OCG 540, 625, 628, 643, 644, 645, 646, 649, 651, 652, 678, 681; OCE 582, 688; and CVE 581, 585, 587, 588, 677, 681, 682, 687.

German (GER)

Section Head: Professor Grandin

101 Beginning German I (I and II, 3) Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior German is required. Staff (F)

- 102 Beginning German II (I and II, 3) Continuation of 101. (Lec. 3) Pre: 101 or equivalent. Staff (F)
- 103 Intermediate German I (I and II, 3) Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. (Lec. 3) Pre: 102 or equivalent. Staff (F)
- 104 Intermediate German II (I and II. 3) Continuation of 103. (Lec. 3) Pre: 103 or equivalent.
- 105, 106 Basic Conversation I, II (I and II, 1 each) 105: Practice in conversational skills. (Lec. 1) Pre: credit or concurrent enrollment in 103. 106: Continued practice in conversational skills. (Lec. 1) Pre: credit or concurrent enrollment in 104. Staff
- 111, 112 Intensive Beginning German (SS, 4 each) Study of the fundamentals of German with special emphasis on listening and speaking skills. (Lec. 4) Pre: 111 or equivalent for 112. Not for major credit in German. Staff
- 113. 114 Intensive Intermediate German (SS, 4 each) Practice in listening and speaking. Development of basic reading and writing skills. Review of grammatical structure. (Lec. 4) Pre: 112 or equivalent for 113; 113 or equivalent for 114. Staff
- 201, 202 Intermediate Conversation I, II (/ and II, 1 each) Conversation skills for students who have completed intermediate German. 202: Continuation of 201. (Lec. 3) Pre: 104 or permission of instructor. Staff
- 205, 206 Conversation and Composition (/ and II, 3 each) Development of facility in spoken and written German using contemporary writings and topics; special emphasis on general classroom discussion. (Lec. 3) Pre: 104 or equivalent. Staff
- 215, 216 Advanced Conversational German (SS, 4 each) Intensive practice in speaking and listening, with some attention to writing skills. (Lec. 4) Pre: 114 or equivalent. Staff
- 221 Introduction to Business German (SS, 1) Conversational practice in German with emphasis on the acquisition of vocabulary pertinent to international business. (Lec. 1) Pre: 112 or equivalent. Grandin
- 305 Advanced Conversation (1, 3) Intensive practice in spoken German based on matters of current interest in German-speaking countries. (Lec. 3) Pre: 206 or equivalent. In alternate years. Next offered 1995-96. Crossgrove

- 306 Advanced Composition (II, 3) Training in various forms of writing by means of frequent compositions and critiques. (Lec. 3) Pre: 206 or equivalent. In alternate years. Next offered 1995-96. Crossgrove
- 315, 316 Language Study Abroad (I and II, 3-5 each) Credit for advanced language study in a German-speaking country. (Practicum) Pre: 206 or equivalent and permission of section head. Staff
- 327 Introduction to German Studies and Literature (I or II, 3) Major developments and figures in German culture, literature, art, and society of the twentieth century. (Lec. 3) Pre: 206 or permission of instructor. Kirchner
- 328 Introduction to German Cultural History and Literature (I or II, 3) Overview of major German cultural developments starting with the "Germany" of the Romans and ending with unification. Significant figures and developments in literature, art, and society, (Lec. 3) Pre: 206 (or equivalent) or permission of instructor. Kirchner
- 392 Masterpieces of German Literature (II, 3) Literary works in English translation from 1800 to the present. (Lec. 3) Not for major credit in German. Staff (A) (F)
- 408 (or LIN 408) The German Language: Past and Present (1, 3) Introduction to the history and present state of the German languages. Study of standard and colloquial German, dialects, Swiss and Austrian variations, language of youth and professions. Analysis of various test types. Tendencies in present-day German. (Lec. 3) Pre: 305 or permission of instructor. Not for araduate credit. Hedderich
- 411 Advanced Technical German See Engineering 411.
- 421 Business German (I and II, 3) Study of the concepts and terminology of the German language common to the realm of international business. Intended for advanced students of business and German. (Lec. 3) Pre: junior standing, credit or concurrent enrollment in 305 and 306. Next offered fall 1996. Hedderich
- 441, 442 German Literature of the Eighteenth Century (I and II, 3 each) Principal literary movements of the century as illustrated by leading writers of the time. (Lec. 3) Pre: 206 or equivalent. 441 is not required for 442. In alternate years. Next offered 1996-97. Grandin
- 452 German Literature of the Nineteenth Century (I and II, 3) Principal literary movements of the century as illustrated by leading writers of the time. (Lec. 3) Pre: 206 or equivalent. In alternate years. Next offered 1995-96. Staff

- tific trends, reform movements, and growth of the democratic ideal. (Lec. 3) Strom (L)
- 344 History of the North American Indian (I or II, 3) Native North Americans from pre-Columbian times to present. Emphasis on ideological conflict between Indians and whites. (Lec. 3) Costigliola (F)
- 346 Immigration to Ethnicity in Modern America (1, 3) Nature of population movements to the United States in nineteenth and twentieth centuries, formation of ethnic communities and their internal dynamics, role of ethnic groups in American social, cultural, and political history. (Lec. 3) Findlay (L)
- 349 History of American Labor (1 or 11, 3) Changes in work, lifestyle, and political consciousness of American workers in nineteenth and twentieth centuries; conflicts between labor and capital, and relationship to emergence of labor movements. (Lec. 3) Staff
- 351 American Women in the Nineteenth Century (II, 3) Emphasis on women's paid and unpaid labor, culture, and domestic arts; the emergence of the women's rights movement; the impact of industrialization and urbanization; and changing notions of sexuality. (Lec. 3) Pre: 141 or 142, 145, or WMS 150, or permission of instructor. Strom
- 352 American Women in the Twentieth Century (II, 3) Emphasis on the history of women's work and sexuality; women in the labor, civil rights, and feminist movements; and images of women in popular culture. (Lec. 3) Pre: 141 or 142, 145, or WMS 150, or permission of instructor. Not open to students with credit in 347. Strom
- 353 United States Diplomatic History to 1914 (I or II, 3) Analysis of the people, ideas, and institutions which shaped the rise of the United States from thirteen colonies to the most powerful nation in the world. (Lec. 3) Costigliola (L)
- 354 United States Diplomacy in the Twentieth Century (1 or II, 3) Analysis of people, ideas, and institutions which have shaped American relations with the rest of the world from World War I to the present. (Lec. 3) Costigliola (L)
- 357 History of Religion in the United States (1, 3) Background, emergence of evangelical Protestant synthesis, disintegration of this synthesis, and development of a pluralistic religious community in modern America. (Lec. 3) Findlay
- 358 Recent America in Film (II, 3) An investigation of American culture and history since 1930 using films as the major resource for study, with

- emphasis on the Great Depression, World War II, sexual interaction, and race relations. (Lec. 1, Lab. 4) Strom
- 360 American Culture 1865–1940 (1 or 11, 3) Explores the nature and sources of American culture with emphasis on the diversity of its origins and forms of expression. (Lec. 3) Klein (L)
- 362 History of Rhode Island (II, 3) History of Rhode Island from the first English settlement to the present day. Social, political, and economic aspects of internal development and the relation of the state to the region and the nation. (Lec. 3) Pre: 141 and 142. Staff
- 365 Civil War and Reconstruction (1 or 11, 3) American history during the period 1850-1877, giving equal emphasis to the background of the Civil War, the war itself, and the social, political, and economic aspects of Reconstruction. (Lec. 3) Klein and Strom
- 372 Science and Ethics (I or II, 3) A historical study of the ways in which science has produced a new range of ethical concerns. Examples, case histories, and public policies. (Lec. 3) Pre: junior standing or permission of instructor. Briggs (L)
- 374 History of Modern China (II, 3) Political, social, economic, and cultural development of China since 1800 with emphasis on the development of Chinese nationalism and on the rise, theory, and practice of Chinese communism. (Lec. 3) Kim (F)
- 375 History of Modern Japan (1, 3) Background and significance of the Meiji restoration (1868) and modernization; the development of Japanese militarism, the fall of the Japanese Empire, and the emergence of the "New Japan." (Lec. 3) Kim (F)
- 376 Women in Muslim Societies (1 or 11, 3) Examines gender relations in the modern Middle East through novels, poetry, and oral histories, as well as through historical and anthropological studies. (Lec. 3) Staff (F) (L)
- 377 Revolution in Islam (I or II, 3) Examines the history of revolutionary ideology in Islamic thought and places, modern revolutions—such as the Iranian revolution of 1978—within a broader context of both Sunni and Shi'i radical activism. (Lec. 3) Staff (F) (L)
- 378 Arab-Israeli Conflict (1 or II, 3) An examination of the roots of Arab nationalism and modern political Zionism; conflict between the World Wars; the creation of the state of Israel and the causes of continuing conflict since its creation. (Lec. 3) Staff (F)

- 381 History of Colonial Latin America (1, 3) The interaction of American-Indian civilizations with European and African elements in the Spanish and Portuguese empires of the New World, concluding with the wars for independence. (Lec. 3) Pegueros (F) (L)
- 382 History of Modern Latin America (II, 3) Historical analysis of the political, cultural, and social-economic dimensions of tradition, reform, and revolution in Latin America since 1810. (Lec. 3) Pegueros (F) (L)
- 384 The Caribbean: New World/Third World (I or II, 3) Historical and contemporary development of the Caribbean world, emphasizing efforts by the regions' peoples to achieve political, economic, and cultural independence from external domination. (Lec. 3) Pequeros (F) (L)
- 385 Revolution and Unrest in Central America and the Caribbean (II, 3) Historical origins of social unrest in Central America and the Spanish-speaking Caribbean. Cuban and Nicaraguan revolutions, civil conflict in Guatemala and El Salvador, U.S. policy. (Lec. 3) Pre: 180, 381, or 382 are recommended, but are not prerequisites. **Pequeros**
- 388 (or AAF 388) History of Sub-Saharan Africa (1, 3) Ancient and medieval Africa, and the impact of Islam; the "Glorious Age" of the Sudanic empires; the slave trade and the age of exploration; the period of European partition and the rise of African nationalism. (Lec. 3) Pre: junior standing. Weisbord (F)
- 390 War in the Nuclear Age (II, 3) American military history from World War II. Operations in World War II, Korea, Vietnam. Emphasis on the revolution in warfare wrought by nuclear weapons, current conventional and nuclear strategies, probable consequences of nuclear war. (Lec. 3) Pre: junior standing. Staff
- 391 Directed Study or Research (I and II, 3) Special work arranged to meet the needs of individual students who desire advanced work. (Independent Study) Pre: permission of chairperson. May be repeated for a total of 6 credits with permission of instructor and chairperson. Staff
- 393 Topics in History (I and II, 1-3) Subject, course content, and years offered will vary according to expertise and availability of instructors. (Seminar) May be repeated for credit with permission of chairperson. Staff
- 397 The Historical Landscape of Britain (SS, 3) Taught in England. Examines the impact of political, military, religious, economic, and social change in the past six or seven centuries on the

landscape of village and field and town and country, (Lec. 2, Lab. 3) Usually taught in conjunction with ENG 397. Gutchen (F)

- 398 History Through Science Fiction (II, 3) Ideas about history in popular culture as seen in the literary genre of science fiction. (Lec. 3) Briggs and Klein (L)
- 401 Advanced Topics in European History (I or II, 3) Subject and course content will vary from semester to semester. Student work will emphasize historiographical analysis and the use of specialized research materials. (Lec. 3) Pre: junior, senior, or graduate standing in history or permission of instructor. May be repeated for credit with permission of chairperson. Staff
- 441 Advanced Topics in American History (I or II, 3) Subject and course content will vary from semester to semester. Student work will emphasize historiographical analysis and the use of specialized research materials. (Lec. 3) Pre: junior, senior, or graduate standing in history or permission of instructor. May be repeated for credit with permission of chairperson. Staff
- 481 Advanced Topics in Asian or Latin American History (1 or II, 3) Subject and course content will vary from semester to semester. Student work will emphasize historiographical analysis and the use of specialized research materials. (Lec. 3) Pre: junior, senior, or graduate standing in history or permission of instructor. May be repeated for credit with permission of chairperson. Staff
- 495 Seminar in History (1 or II, 3) Development of skills in historical research and writing and in the critical analysis of historical works. Topics vary. (Seminar) Pre: completion of 401, 441, or 481, or permission of instructor. This course (or HIS 496) is required of and open only to undergraduate history majors. May be repeated for credit with different topic with permission of instructor. Not for graduate credit. Staff
- 496 History Computer Workshop (1 or 11, 3) Development of skills in historical research and writing and in the critical analysis of historical works. Topics vary. (Seminar) Pre: completion of 401, 441, or 481, or permission of instructor. This course (or HIS 495) is required of and open only to undergraduate history majors. May be repeated for credit with different topic with permission of instructor. Not for graduate credit. Staff
- 502, 503 Special Readings in European History (I and II, 3 each) Intensive tutorial work, research, and readings in European history. (In-

- dependent Study) Pre: graduate standing, permission of instructor, and concurrent audit of parallel 300-level course. May be repeated. Staff
- 506 Seminar in European History (1 or 11, 3) Selected topics in European history, with intensive reading of important secondary and/or primary sources; critical written analysis of historical method, research, and modes of interpretation. (Seminar) Pre: graduate standing or permission of instructor. Briggs, Gutchen, Honhart, Thurston, or Weisbord
- 507 Seminar in United States History (1 or 11. 3) Selected topics in United States history, with intensive reading of important secondary and/or primary sources; critical written analysis of historical method, research, and modes of interpretation. (Seminar) Pre: graduate standing or permission of instructor. Cohen, Costigliola, Findlay, Klein, Schwartz, Strom, or Weisbord
- 508 Seminar in Asian or Latin American History (I or II, 3) Selected topics in Asian or Latin American history, with intensive reading of important secondary and/or primary sources; critical written analysis of historical method, research, and modes of interpretation. (Seminar) Pre: graduate standing or permission of instructor. Kim or Pegueros
- 536, 537 Special Readings in American History (I and II, 3 each) Intensive tutorial work, research, and readings in American history. (Independent Study) Pre: graduate standing, permission of instructor, and concurrent audit of parallel 300-level course. May be repeated. Staff
- 544 Colloquium in Worker History See Labor and Industrial Relations 544.
- 588, 589 Special Readings in Asian or Latin American History (I and II, 3 each) Intensive tutorial work, research, and readings in Asian or Latin American history. (Independent Study) Pre: graduate standing and permission of instructor. Concurrent audit of parallel 300-level course required. May be repeated. Staff
- 591 Directed Study or Research (I and II, 3) Directed readings, research, or study designed to meet the particular needs of individuals or small groups of graduate students. (Independent Study) Staff
- 599 Master's Thesis Research (I ond II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Home Economics (HEC)

400 Home Economics Seminar (II, 1) Didactic and experimental learning in the areas of home economics. Historic perspective, current issues. and futuristic trends in home economics. (Seminar) Pre: HSS 320 and field experience. Intended for general home economics majors. Not for graduate credit. Staff

Home Economics Education (HED)

595 Master's Project: Action Research (I and II, 1-6) Candidates plan and carry out an action research project approved by the instructor. Number of credits is determined each semester in consultation with the major professor. Pre: admission to a master's program in home economics education, a course in research methods, and permission of chairperson. May be repeated for a maximum of 6 credits. Staff

Honors Program (HPR)

Director: Professor Klein

Honors courses (HPR) are open only to eligible students. See page 36 of this bulletin or the Honors Program brochure for requirements. Sections of honors courses that have been approved for General Education credit in particular areas are so marked.

- 101 Analytical Thinking in the Humanities (I and II, 3) Identification and comparison of analytical and critical methods employed by humanistic disciplines. Practice in their application. (Seminar) Staff (A)
- 102 Analytical Thinking in the Social Sciences (I and II, 3) Identification and comparison of the analytical and critical methods employed in the social sciences. Practice in their application. (Seminar) Fall 1995: The JFK Assassination: Facts and Fictions. Rahn (S)
- 103 Analytical Thinking in the Natural Sciences (I and II, 3) General themes in science as the basis for studying the "scientific method" and methods of analytical thinking common to problem solving in the sciences. (Seminar) Staff (N)
- 104 Analytical Thinking in the Letters (I and II, 3) Identification and comparison of analytical and critical methods employed by historians and philosophers. Practice in their application. (Seminar) Fall 1995: Introduction to Native American Literature. Gititi (L)

- 105 Honors Study in Fine Arts and Literature (I and II, 3) Exploration of themes, topics, and techniques in the fine arts and in literature. (Seminar) Fall 1995: Creative Writing—Poetry; Cappello (A). Spring 1996: Communication and the Moving Image-Reading Film; Zorabedian (A)
- 106 Honors Study in Foreign Language and Culture (I and II, 3) Exploration of themes and topics relating to foreign languages and cultures. (Seminar) Staff (F)
- 107 Honors Study in Letters (I and II, 3) Exploration of themes and topics in the field of letters. (Seminar) Fall 1995: Federal Courts and Federal Jurisdiction. Hagopian (L)
- 108 Honors Study in Mathematics (I and II, 3) Exploration of topics and creative use of problem solving in mathematics. (Seminar) Staff (M)
- 109 Honors Study in Natural Sciences (I and II, 3) Exploration of themes and topics in the natural sciences. (Seminar) Fall 1995: The Evolution of Life on Earth. Abell (N)
- 110 Honors Study in Social Sciences (I and II, 3) Exploration of themes and topics in the social sciences. (Seminar) Fall 1995: Introduction to the Study of Conflict. Schultz (S)
- 111 Honors Study in English Communication (I and II, 3) Exploration of the elements of English communication. (Seminar) Staff (C)
- 112 Honors Study in Writing (I and II, 3) Exploration of the elements of writing. Fall 1995: Special Honors Section of WRT 101. (Seminar) Reynolds (Cw)
- 113 Honors Course in Philosophy (I and II, 1-4) (Seminar)
- 114 Honors Course in History (I and II, 1-4) (Seminar) Fall 1995: How the West Was Won-Honors Section of HIS 143. Klein (L)
- 115 Honors Course in Political Science or Economics (I and II, 1-4) (Seminar)
- 116 Honors Course in Sociology or Anthropology (I and II, 1–4) (Seminar)
- 117 Honors Course in Psychology (I and II, 1-4) (Seminar) Spring 1996: Special Honors Section of PSY 113. Silverstein (S)
- 118 Honors Course in Speech Communication or Journalism (I and II, 1-4) (Seminar)
- 119 Honors Course in Interdisciplinary Studies (I and II, 1-4) (Seminar)
- 121 Honors Course in Mathematics (I and II, 1-4) (Seminar)

- 122 Honors Course in Physical Sciences (I and II, 1-4) (Seminar)
- 123 Honors Course in Biological Sciences (I and II, 1–4) (Seminar)
- 124 Honors Course in Fine Arts (1 and 11, 1-4)
- 125 Honors Course in Language or Literature (I and II, 1-4) (Seminar)
- 201, 202 Honors Colloquium (I and II, 3 each) (Lec. 2, Rec. 1) Spring 1996: Mortal Questions. Brownell, Hames, and Knott (L)
- 203 The Prepared Mind: Critical and Analytical Problem Solving (II, 3) Introduction to problem solving through the development of creativity, critical thinking, and communication skills. Focus on individual development in these areas. (Seminar) Staff (L)
- 301, 302 Honors Tutorial (I and II, 3 each) (Practicum) Fall 1995 and Spring 1996: Administrative Internship. Staff
- 311 Honors Tutorial in Fine Arts (I and II, 1-3) (Seminar) Fall 1995: Men in the Dark-Masculinity in American Films. Zorabedian
- 312 Honors Tutorial in Language or Literature (I and II, 1-3) (Seminar) Spring 1996: Contemporary Women Poets and Performance Artists; Capello. Spring 1996: Readings in Multicultural Literatures; Gititi
- 313 Honors Tutorial in Philosophy (I and II, 1-3) (Seminar)
- 314 Honors Tutorial in History (I and II, 1-3) (Seminar) Spring 1996: The Coming of the Civil War. Klein
- 315 Honors Tutorial in Political Science or **Economics** (I and II, 1–3) (Seminar) Spring 1996: Fundamental Freedoms, Wood
- 316 Honors Tutorial in Sociology or Anthropology (I and II, 1-3) (Seminar)
- 317 Honors Tutorial in Psychology (I and II, 1–3) (Seminar) Fall 1995: Honors Section of PSY 301. Silverstein
- 318 Honors Tutorial in Speech Communication or Journalism (I and II, 1-3) (Seminar)
- 319 Honors Tutorial in Interdisciplinary Studies (I and II, 1-3) (Seminar) Spring 1996: Science, Math, and the JFK Assassination. Rahn
- 321 Honors Tutorial in Mathematics (I and II, 1–3) (Seminar)
- 322 Honors Tutorial in Physical Sciences (/ and II, 1-3) (Seminar)

- 323 Honors Tutorial in Biological Sciences (I and II, 1-3) (Seminar)
- 331, 332 Honors Tutorial in Human Science and Services (I and II, 1-3 each) (Seminar)
- 341, 342 Honors Tutorial in Business (I and II, 1–3 each) (Seminar)
- 351, 352 Honors Tutorial in Nursing (I and II, 1-3 each) (Seminar)
- 361, 362 Honors Tutorial in Engineering (I and II, 1-3 each) (Seminar)
- 371, 372 Honors Tutorial in Resource Development (I and II, 1-3 each) (Seminar)
- 381, 382 Honors Tutorial in Pharmacy (I and II, 1-3 each) (Seminar)
- 401, 402 Honors Project (I and II, 3 each) (Independent Study)
- 411, 412 Honors Seminar (I and II, 3 each) (Seminar) Spring 1996: Conflict Resolution. Schultz

Human Development and Family Studies (HDF)

Chairperson: Associate Professor Caruso

- 150 Personal Development (I and II, 3) Emphasis on self-understanding and human relationships in general. Influence of societal roles, groups interaction, and contemporary cultural issues of individual development. (Lec. 3) Staff
- 200 Life-Span Development I (I, 3) For students who intend to enter a profession dealing with children. Physical, social, mental, emotional growth and development, and interrelations among them from birth to puberty. (Lec. 3) Blood or Cohen
- 201 Life-Span Development II (II, 3) For students entering the human services. Introduction to social, mental, emotional growth and development, and interrelations among them. Emphasis on adolescence through senescence. (Lec. 3) Kalymun
- 202 Research Perspectives in Human Development and Family Studies (I and II, 3) Introduction to research processes in human development and family studies. Emphasis on reading and evaluating the research literature and preparing and presenting literature reviews. (Lec. 3) Pre: admission to the human development and family studies program. Cohen, Kalymun, or Horm-Wingerd

- 203 Introduction to Work with Children (1 and II, 3) Theory and practice in care, teaching, and guidance of preschool children. Lectures, discussion, and participation in a preschool program, (Lec. 2, Lab. 2) Pre: 200. Warford or Horm-Wingerd
- 220 Gerontology: Theory and Application (I, 3) Introduction to the study of aging processes: biological, psychological, and social theories. Health, social, and other age-related problems will be examined in the classroom and through interaction with older people. (Lec. 3) Staff (S)
- 221 Work with the Aging (II, 3) Includes theoretical, ethical, and practical aspects of work with the aging. Each student will have ongoing field experience in a setting with older people. Own transportation desirable. (Lec. 2, Lab. 2) Pre: 220. Staff
- 230 (330) Marriage and Family Relationships (I and II, 3) Male-female and other close relationships in courtship and family systems as influenced by personality and culture in a changing society. Professional and functional orientation. (Lec. 3) Schroeder
- 297 Contemporary Issues in Student Development (1 or II, 1-3) Student orientation, leadership, and training practices presented by various Student Affairs and other University programs, such as Student Life, Residential Life, Health Services, University College, and Affirmative Action. (Seminar) May be repeated for up to 6 credits. S/U only. Staff
- 298 Contemporary Issues in Student Development (I or II, 1-3) Student leadership models and practices in various student development settings, such as Student Affairs, Student Life, Residential Life, University College, and Health Services. (Seminar) Staff
- 301 Curriculum in Early Childhood (1, 3) Program planning and teaching techniques that foster development of the young child in all curriculum areas. Includes Piagetian assessment and three hours per week in a local child care setting. (Lec. 2, Lab. 3) Pre: 203 and admission to the early childhood education program, or permission of instructor. Caruso
- 302 Literature for Children (1 or 11, 3) Literary heritage of American children and criteria for the selection and presentation of literature to children. (Lec. 3) Pre: junior standing. Staff
- 303 Early Childhood Practicum (II, 3) Supervised teaching in the Child Development Center with children through kindergarten age. Includes curriculum design and working with spe-

- cial needs children. (Lec. 2, Lab. 3) Pre: 301 or permission of instructor. Caruso
- 310 Adolescent Growth and Development (I and II, 3) Physical, psychological, social, and emotional growth and development of the individual during adolescent years. (Lec. 3) Pre: 200 or PSY 232, Blood
- 350 Human Relations Laboratory (I or II, 1) Understanding individual behavior in the context of a social group; discussion and selected group dynamics techniques. (Lab. 2) Pre: 150, 200, and permission of chairperson. S/U credit. Staff
- 357 Family and Community Health (I and II, 3) Health maintenance throughout life. Specific health concerns of various age groups. Community and world health needs and agencies concerned with meeting these needs. (Lec. 3) Pre: junior standing, Clark
- 380 Field Experiences in Community Agencies (I and II, 6-12) Supervised experience in community agencies. The experience will be defined by a job description and learning contract approved by the course instructor, relevant agency supervisor, and the student during the semester prior to enrollment in the course. (Practicum) Pre: concurrent enrollment in 381, junior standing, and permission of instructor. S/U only. Staff
- 381 Field Experience Seminar (I, II, or SS, 1) Group discussion of field experience in 380 and related academic assignments. (Seminar) Pre: concurrent enrollment in 380 and permission of instructor. May be repeated for a maximum of 2 credits. Schaffran or Kalymun
- 400 Child Development: Advanced Course (I and II, 3) Presentation of theory of human development and consideration of some of the classical and current investigations in the field. (Lec. 3) Pre: 200 or equivalent. Cohen or Horm-Wingerd
- 406 Growth and Development During Infancy (I or II, 3) Study of developmental sequences from birth to two years with emphasis on biological, psychological, social, and environmental influences affecting growth, Laboratory periods consist of observation and experience with infants in various settings. (Lec. 2, Lab. 2) Pre: 200. Caruso or Cohen
- 420 Human Development During Adulthood (I or II, 3) Major social and cultural factors influencing development after physiological maturity and prior to senescence. Major theorists and normal crises of adulthood. (Lec. 3) Pre: 201.

- 421 Death, Dying, and Bereavement (I or II, 3) Exploration of human death, dving, and bereavement. Focus on biomedical, psychological, and sociocultural dimensions of the topic. (Lec.
- 424 Design and Delivery of Services for Mentally Retarded Adults (II, 3) Study of community-based services for mentally retarded adults. Offered for students who are interested in gerontology and/or who are planning careers in the multidisciplinary field of mental retardation. (Lec. 3) Pre: 220 or permission of instructor. Staff
- 430 Family Interaction (I and II, 3) Interdisciplinary approach to the dynamics of intrafamily relationships, interactions of family units and family members with elements of the sociocultural environment. (Lec. 3) Pre: 230. Schroeder
- 431 Family and the Elderly (I or II, 3) Emphasis on the elderly in analysis of intergenerational organization and relationships. Cultural values, psychosocial factors, economic considerations, and societal trends relative to family life. (Lec. 3)
- 432 Perspectives on Parenting (1 or 11, 3) Comprehensive study of central issues, research, and recent developments in the field of parenting; the impact of the behavioral sciences and social change on parents. (Lec. 3) Pre: 200 or permission of instructor. Staff
- 433 Family Life Education (I or II, 3) Interdisciplinary consideration of relationships between the sexes during childhood and adolescence, including: family health, normal psychosexual development, marriage, ethics, sex education, teaching of family relations. (Lec. 3) Pre: 230 or permission of chairperson. Staff
- 434 Children and Families in Poverty (1 or 11, 3) Interdisciplinary approach to understanding culturally and economically deprived people. Some experience working with such individuals or groups. (Lec. 3) Pre: senior standing in the major or permission of instructor. Staff
- 437 (or SOC 437) Law and Families in the United States (I or II, 3) Seminar to investigate family roles, relationships, rights, and responsibilities as defined by the law. Emphasis on explicit and implicit family policy revealed in the various branches of law. (Seminar) Pre: 230 or SOC 212 or permission of instructor. Staff
- 440 Environmental Context of Aging (I or II, 3) Identifies theories and domains of personenvironment interaction. Study of the normal aging-related changes as design determinants of the physical milieu. Emphasis on assessment

and analysis of environment-behavior issues. (Lec. 3) Pre: 220 or permission of instructor. Kalymun

- 450 Introduction to Counseling (I and II, 3) Introduces students in human sciences to interviewing and counseling skills in both professional and paraprofessional settings. Integrates theory, practice, and application by didactic and experimental learning. (Lec. 3) Pre: senior or graduate standing, or permission of chairperson. Staff
- 455 Assessment in Early Childhood (II, 3) An overview of cognitive, affective, and psychomotor assessments used by early childhood educators. Consideration of various types of assessment, evaluation of assessment techniques, and examination of current trends and practices. (Lec. 3) Pre: student teaching or equivalent and permission of instructor. In alternate years. Next offered spring 1996. Horm-Wingerd
- 456 Assessment Practicum (II, 3) Supervised experience in completing cognitive, affective, and psychomotor assessments of young children. (Practicum). Pre: credit or concurrent enrollment in 455. In alternate years. Next offered spring 1996. Horm-Wingerd
- 497 Special Problems (I and II, 1-3) Open to qualified seniors who wish to do advanced work primarily consisting of lab or field experiences. Students must obtain written approval from proposed faculty supervisor prior to registration. Pre: senior standing and permission of chairperson. May be repeated for no more than 9 credits. Not for graduate credit. S/U only. Staff
- 498 Special Problems (I and II, 1-3) Open to qualified seniors who wish to do advanced work. Conducted as a seminar or supervised individual project. Students must obtain written approval from proposed faculty supervisor prior to registration. Pre: senior standing and permission of chairperson. May be repeated for no more than 9 credits. Not for graduate credit. Staff
- 500 Human Development Seminar (I or II, 3) Contemporary research issues emerging in the human development literature at five stages of development (infancy, childhood, adolescence, adulthood, and old age), with emphasis placed on continuity and transition across the life span. (Seminar) Pre: 400 or 420 or equivalent, or permission of instructor. Cohen
- 501 Seminar in Early Childhood Education (I or 11, 2) Seminar in trends and model programs in early childhood education. Special attention to substantive evaluation and program design

issues for the professional early childhood educator. (Seminar) Pre: student teaching or equivalent classroom experience or permission of instructor. Staff

- 502 Cognitive Aspects of Early Childhood (I or II, 3) Impact of theory and research in cognitive development and its relation to language, learning, and thinking. Special attention to Piaget's impact on current research and educational programs. (Seminar) Pre: 200, 201, or permission of instructor, Staff
- 503 Social Development: Infancy Through Adolescence (I or II, 3) Seminar providing indepth examination and critique of theory and research in social development. Implications for diverse populations and applications for human service settings will be drawn. (Seminar) Offered in alternate years. Horm-Wingerd or Cohen
- 504 Contemporary Theories of Ego Development (I or II, 3) Surveys of the recent theoretical constructs which synthesize the cognitive and psychosocial traditions into a developmental view of the ego. The relevance of the psychology of women to this synthesis is also considered. (Seminar) Pre: graduate standing and permission of instructor. In alternate years. Staff
- 505 Human Sexuality and Counseling (I or II, 3) Historical, cultural, and developmental issues in human sexuality and counseling. Implications for self and client understanding through personal exploration and desensitization to sensitive topics. (Lec. 3) Pre: graduate standing or permission of instructor. Rae or Staff
- 520 Developmental Issues in Later Life (I or II, 3) Theoretical and philosophical foundations for understanding the normal changes, pathological developments, clinical assessments, and intervention strategies associated with later life. (Seminar) Pre: graduate standing. Staff
- 527 Health Care Policy and the Elderly (I or II, 3) Present and future problems in policy development to meet health care needs of the elderly. Consideration of historical aspects, demographic change, policy models. (Seminar) Pre: graduate standing. Staff
- 529 Practicum Seminar in Gerontology (I or II, 1) A seminar focusing on adult development and aging. Designed for graduate students in gerontology to exchange results of original research or practical experiences through reports and discussions. (Seminar) Pre: graduate standing or permission of instructor. May be repeated for a maximum of 3 credits. Staff

- 530 Family Theory Seminar (1, 3) Intensive study of theories in the family field, integrated with contemporary family issues, and family therapy. (Seminar) Pre: 430 or permission of instructor. Staff
- 535 Families Under Stress: Coping and Adaptation (1, 3) Theoretical models of family interaction, development, and stress as applied to understanding of family behavior in managing stress or events. Concepts of stress, vulnerability, adaptability, coping, regenerative power, social supports, and related research. (Seminar) Pre: 430, 570, or equivalent graduate course work in family development or family sociology and permission of instructor. Staff
- 550 Vocational Information and Career Development (I or II, 3) Classification and description of jobs and industries; study of occupational trends; needs of special groups entering the labor market; vocational development theories and counseling for long-range career planning, (Lec. 3) Pre: 450 and graduate standing. Staff
- 551 Counseling Theory and Techniques (I or II, 3) Theoretical foundation and practice of counseling and therapy in various settings. (Lec. 3) Pre: 450 or permission of instructor. Staff
- 553 Counseling Practicum (I or II, 3) Advanced counseling and therapy issues. Multiple sessions using tapes and critiques to assess growth and competence of the clinician. Limited enrollment. (Practicum) Pre: 450, 551, advanced standing, and permission of instructor. Staff
- 554 Individual Appraisal in Human Services (II, 3) Nature of the appraisal process and data essential to understanding the educational, vocational, and social needs of persons. Emphasis is on a team approach to counseling services and the utilization of case materials. (Seminar) Pre: 551 and 570. Staff
- 555 Gerontological Counseling (1 or 11, 3) An overview of the developmental process of later life, particularly relevant to counselors and therapists. Clinical counseling implications and therapeutic strategies will be emphasized. (Lec. 3) Pre: 420, 450, or equivalent, and graduate standing. In alternate years. Staff
- 559 Gender Issues in Therapy (1 or 11, 3) Systemic integration of the issues and therapeutic dilemmas growing out of society's changing views of women and men. Emphasis on research, therapist self-awareness, and evaluation of current therapies. (Seminar) Pre: 450 or equivalent and graduate standing or permission of instructor, Rae

560 Group Procedures in Counseling (I or II, 3) Principles and techniques of group counseling and therapy as applied to education, counseling, and student personnel work. A practical and theoretical approach with emphasis on facilitation techniques, leadership patterns, and counseling skills. Enrollment is limited. (Lec. 2, Lab. 4) Pre: 551 and permission of instructor. Staff

562 Organization Development in Human Services (I or II, 3) Theory and technology of organization development as applied in human service agencies; entry diagnosis, implementation, and evaluation strategies, skills practice in consulting and training; evaluation and research of change efforts. (Lec. 2, Lab. 4) Pre: prior or concurrent enrollment in 560 or permission of instructor, Staff

563 Marital and Family Therapy I (1, 3) Major theoretical perspectives, including system theory as related to therapy. Communication and relationship skills, negotiation and behavioral contracting, treating specific relationship problems, therapy evaluation. (Seminar) Pre: 430 and permission of instructor. Staff

564 Marital and Family Therapy II (II, 3) Major contemporary theories of family therapy and the development of family therapy as a unique intervention strategy; special consideration of issues and problems commonly confronted in conducting family therapy. (Seminar) Pre: 563. Maynard

565 Family Therapy Practicum (1, 11, or SS, 3) Supervised clinical experience in marriage and family therapy. Case materials will be presented by students, and taped segments of actual counseling sessions will be reviewed. (Lec. 1, Lab. 5) Pre: admission to MFT program or permission of instructor. May be repeated for a maximum of 18 credits. Staff

566 Theoretical and Clinical Problems (II, 3) Examination of major ongoing and emerging theoretical issues in family therapy. The implications of these problems in clinical practice with families. (Lec. 3) Pre: 564 and graduate standing.

567 Principles and Practices of College Student Personnel Services (1, 3) Survey of the historical, psychological, organizational, and educational factors which have evolved and combined to form student personnel work. (Lec. 3) Pre: graduate stonding and permission of instructor. Staff

568 Organization and Administration of College Student Personnel Services (II, 3) Systematic analysis of current practices in the alignment and operation of student personnel services, with continuing review of their interrelationships with the total educational program. (Lec. 3) Pre: 567. Staff

569 Assessment in Family Therapy (1 or 11, 3) Administration and interpretation of assessment instruments for treatment, planning, and evaluation. Ethical, legal, and theoretical issues related to family systems assessment are discussed. (Seminar) Pre: graduate standing or permission of instructor, Adams

570 Research in Human Development and Family Studies (I and II, 3) Historical, philosophical, and procedural foundations of scientific inquiries into individuals and families, Explores the various ways to acquire information about human development and family relationships. (Lec. 3) Pre: graduate standing or permission of instructor. Staff

578 Ethical, Legal, and Professional Concerns in Family Therapy (1, 3) Ethical, legal, and professional issues encountered by family therapists in the delivery of services. These aspects of therapy practice along with systemic theory are cornerstones of competent practice. (Seminar) Pre: 563 and 565, 530 and 535, and concurrent enrollment in 583. Staff

580, 581 Professional Seminar (I and II, 3 each) A two-semester sequence. Internship supervision. First semester emphasizes legal, ethical, and professional issues and assignments; second semester emphasizes implementation of case study and research requirements. (Seminar) Pre: concurrent enrollment in 583, 584, advanced standing, and permission of instructor. Staff

583, 584 Master's Internship (I and II, 3 or 6 each) Supervised field experience in various settings. Culminating experience integrates program theory and skills. (Practicum) Pre: concurrent enrollment in 580 for 583, 581 for 584. S/U only. Staff

590 Higher Education Law (I or II, 3) An overview of the effect of federal and state legal systems on university administration and service delivery. Reviews authorities and agencies, major court decisions, and the application of substantive and procedural law principles. (Lec. 3) Pre: graduate standing or permission of instructor. In alternate years. Staff

595 Master's Project: Action Research (I and II, 1-6) Number of credits is determined each semester in consultation with the major professor. Minimum of 6 credits is required of students who have chosen the action-thesis option. (Independent Study) S/U credit.

597, 598 Advanced Study (I and II, 1-3 each) Survey of important research contributions significant to the understanding of human development and relationships. (Independent Study)

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. Minimum of 6 credits is required of students who have chosen the thesis option. (Independent Study) S/U credit.

Human Science and Services (HSS)

Program Head: Professor McKinney

222 Introduction to Human Science and Services (I and II, 3) Survey of contemporary human service needs and delivery systems with emphasis on historical development, values, ethics, agency structures and functions, and consumers. (Lec. 3) Pre: any one of the following—ECN 100, PSC 113, SOC 102, PSY 113, HDF 200 or 201. McKinney

320 Introduction to Research in Human Science and Services (II, 3) Consideration of the philosophy, principles, methods, and materials involved in research in the human sciences. Emphasis also on research reading, writing, and presentation skills. (Lec. 3) Staff

350 Foundations of Public Policy in Human Services (I and II, 3) The analysis of recent public policy proposals in various areas of human services through differing ideological assumptions of traditional and contemporary views of helping professionals. (Lec. 3) Russo (S)

370 Field Experience in Human Science and Services (1 or II, 6-12) Supervised field experience in human service agencies. Prior to placement, the student must develop a learning contract in consultation with the agency and his or her faculty advisor. (Practicum) Pre: junior standing in human science and services and permission of instructor. S/U only. McKinney

399 Senior Project in Human Science and Services (I and II, 3) Supervised project conducting research or creating a product for a human services agency. (Independent Study) Pre: senior standing in human science and services. McKinney

491, 492 Special Problems (I or II, 1-3 each) Advanced work in the human services under the supervision of a faculty member. (Independent Study) Pre: permission of instructor and the Division of Interdisciplinary Studies. Not for graduate credit in human development and family studies. Staff

530 Multidisciplinary Health Seminars for the Elderly (I or II, 3) Field experience for students in various health disciplines. Development of assessment techniques, curricular materials, and team delivery of health seminars to the elderly at community sites. (Sem. 3) Pre: graduate standing or permission of instructor. Clark and Staff

540 Philanthropy in American Culture: Historical, Theoretical, and Practical Principles (1, 3) Aspects of the fundraising process necessary for support of organizations in society's independent sector. Emphasis on philosophy, fundraising techniques and strategies, utilization of human resources, and process management. (Lec. 3) Pre: graduate standing or permission of instructor. Staff

590 Seminar in Human Science (I or II, 3) Investigation of human science as lived experience, reflective inquiry, and reflective practice. Development and presentation of individual projects embodying these characteristics of human science. (Sem. 3) Willis

Industrial and Manufacturing Engineering (IME)

Chairperson: Professor Knight

- **220** Introduction to Industrial Engineering (*I*, 3) Role of industrial and manufacturing engineers. Facilities, product, and process design; industrial studies based on visits to actual manufacturing facilities. (*Lec.* 3) *Pre: MTH* 142. Staff
- 240 Manufacturing Processes (II, 3) Introduction to manufacturing processes. Metrological systems, various unit processes in manufacturing, and numerical control of machine tools. Processes, measurement, accuracy, and precision as they relate to deformation, structure, and state of material. (Lec. 2, Lab. 3) Pre: CHM 101, PHY 204 or 214, credit or concurrent enrollment in CVE 220. Staff
- 325 Computer Solutions in Industrial and Manufacturing Engineering (II, 3) Introduction to microcomputers including extensive computer laboratory experience. Problems in manufacturing, mathematical programming, inventory and production systems, methods and other systems where a computer is needed to reach a solution. Numerical methods. (Lec. 2, Lab. 3) Pre: 220, CSC 200, and MTH 141. Staff

340 (or CHE 340) Materials Processing and Metrology I (*I*, 3) An introduction to the fundamentals of materials processing and metrology. Includes laboratory demonstrations and experiments in machining, casting, and metrology. (*Lec. 3*) Pre: CHE 333 or 437 and CVE 220. Brown

391, 392 Special Problems in Industrial Engineering (I and II, 1–3 each) Independent study and seminar work under close faculty supervision. Discussion of advanced topics in preparation for graduate work, (Independent Study) Pre: junior standing and permission of chairperson. Staff

404 Engineering Economy (I and II, 3) Effects of economics on engineering decisions in design, selection, and replacement of equipment and evaluation of project proposals. Theory of depreciation and obsolescence. (Lec. 3) Pre: ECN 201 and MTH 142. Not for graduate credit in industrial and manufacturing engineering. Olson or Shao

411 Probability for Engineers (1, 3) Elementary probability theory, random variables, and probability distributions. Moment-generating functions, expected values, bivariate normal distributions. Introduction to applied statistics in engineering. (Lec. 3) Pre: MTH 243. Shao

412 Statistics for Engineers (*II*, 3) Continuation of 411. Estimation, hypotheses tests, sampling theory, linear regression. Other engineering applications of applied statistics. (*Lec. 3*) *Pre: 411*. Staff

- **432** Operations Research: Deterministic Models (1, 3) Introduction to major areas of operations research and their application to systems analysis. Linear programming, game theory, elementary network analysis, and related topics. (Lec. 3) Pre: MTH 243, 362, or equivalent. Shao or Sodhi
- 433 Operations Research: Stochastic Models (II, 3) Introduction to inventory and replacement models, queuing theory, simulation, simple stochastic models, and their relation to selected problems. (Lec. 3) Pre: 411 and MTH 243. Shao or Sodhi
- 443 Machining and Machine Tools (II, 3)
 Machine tool motions, power requirements, and
 machining times. Mechanics and economics of
 metal machining. Introduction to numerical
 control and computer-aided programming of
 CNC machine tools. (Lec. 3) Pre: CVE 220 and
 IME 240 or 340. Boothroyd or Knight

444 Assembly and Handling Automation (1, 3) Types and economics of automatic assembly systems. Analyses of automatic feeding and orienting techniques for small parts. Application of robots in assembly. (Lec. 3) Pre: MCE 263 and IME 240 or 340. Boothroyd

446 (or MCE 446) Metal Deformation Processes (II, 3) Study of the characteristics of metal flow under different loading conditions. Theories, capabilities, and limitations of a wide range of deformation processes applied to industrial metalworking. (Lec. 3) Pre: 240 or 340, CVE 220, and CHE 333. Dewhurst

449 (or MCE 449) Product Design for Manufacture (1, 3) Techniques for analyzing product structures for ease of assembly and manufacture. Manual, robot, and high-speed mechanized assembly systems considered for mechanical and electronic products. Covers choice of material and processes in early design. (Lec. 3) Pre: 240 or 340, 443, or permission of instructor. Dewhurst or Boothroyd

- 450 Computer-Aided Industrial and Manufacturing Engineering (*l*, 3) Algorithm formulation and computer-aided problem solving in engineering economics, materials processing and forming, design for assembly, robotics, and operations research. Extensive computer laboratory experience on individual microcomputers. (*Lec. 3*) *Pre: 404, 412, 432, or permission of instructor.* Staff
- **451 Industrial Engineering Systems** (*II*, 3) Design and analysis of facilities and materials handling in systems of production. Location and layout planning of facilities. (*Lec. 3*) *Pre: 325, 404, 412, 432, 433.* Shao
- 491, 492 Special Problems (I and II, 1–6 each) Advanced work under the supervision of a member of the staff and arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. Staff
- 500 Network Application in Industrial Engineering (II, 3) Industrial systems problems that can be formulated in terms of flows in networks. Critical path scheduling, transportation problems, allocation, sequencing, line balancing, etc. (Lec. 3) Pre: 432 or permission of instructor. In alternate years. Shao
- 513 Statistical Quality Assurance (I, 3) Topics in statistical quality control systems. Single, multiple, and sequential sampling. Design and analysis of a wide variety of statistical control systems used in conjunction with discrete and

continuous data, for several kinds of data emission. (Lec. 3) Pre: 412 or equivalent. Staff

514 Special Topics in Statistical Quality Assurance (II, 3) Quality control evaluation and monitoring systems for short-run production processes; analysis of critical specifications in small limited sample opportunities; sequential analyses; statistical procedures for troubleshooting; small sample strategies. (Lec. 3) Pre: 412 or equivalent or permission of instructor. Staff

525 Simulation See Computer Science 525.

533 Advanced Statistical Methods for Research and Industry (1, 3) Estimation and testing; regression and correlation; analysis of variance and related topics. Applications in industrial operations and engineering research. (Lec. 3) Pre: 411 or permission of instructor. Staff

540 Production Control and Inventory Systems (1, 3) Theory and practice of industrial production control and inventory systems. A broad spectrum of mathematical models for static, dynamic, perpetual, and periodic inventory systems as they affect and relate to production. (Lec. 3) Pre: 432 or permission of instructor. Staff

541 Materials Processing and Metrology II (I, 3) Continuation of 340. Engineering analyses in the processing of materials. Dynamic coupling, tool-work-piece interaction, energy and thermal analysis; mechanics of material removal and displacements; advanced topics in mechanical electrical systems for processing of materials. (Lec. 3) Pre: 240 or 340, or permission of instructor. Staff

542 Introduction to Computer-Aided Manufacturing (1, 3) Use of computers in manufacturing. Planning and control of manufacturing facilities and operations. Group technology, flow lines, optimization of machining conditions, numerical and adaptive control, automation, robotic applications. (Lec. 3) Pre: 443 or permission of instructor. Knight

543 Fundamentals of Machining (II, 3) Fundamental treatment of the mechanics and economics of metal machining and grinding. Includes an introduction to numerical control and computer-aided programming of CNC machine tools. (Lec. 3) Pre: CVE 220 and IME 240 or 340 or permission of instructor. Not for graduate credit for students with credit in 443. Boothroyd, Dewhurst, and Knight

544 Automatic Assembly (1, 3) Types and economics of automatic assembly systems. Analysis of automatic feeding and orienting techniques

for small parts. Application of robots in assembly. Economics of assembly systems for printed circuit boards. (Lec. 3) Pre: 240 or permission of instructor. Not for graduate credit for students with credit in 444. Boothroyd and Dewhurst

545 Manufacturing Systems: Analysis, Design, Simulation (1, 3) Problems in manufacturing system analysis and design. Quantitative models and simulation methods applied to production planning, control, scheduling, resource allocation, and decision making in various types of manufacturing systems. (Lec. 3) Pre: 433 or permission of instructor. Shao

546 Advanced Metal Deformation Processes (II, 3) Theory of metal flow under different loading conditions. Prediction of metal forming process capabilities. Advanced topics include effects of anisotropy and mechanics of powder forming. (Lec. 3) Pre: 340 or permission of instructor. Not for graduate credit for students with credit in 446. Dewhurst

549 (or MCE 549) Advanced Product Design for Manufacture (1, 3) Techniques for analyzing product structures for ease of assembly and manufacture. Considers mechanical and electronic products and choice of materials and processes. A design project and term paper are required. (Lec. 3) Pre: 240 or 340 and credit or concurrent enrollment in 444 or permission of instructor. Not for graduate credit for students with credit in 449. Dewhurst or Boothroyd

550 Design for Producibility (II, 3) Project work on product development, collaboration with industry, and submission of design project report. Concentration on effect of design decisions on manufacturing efficiency and cost. (Independent Study) Pre: 449 or 549. Dewhurst, Knight, or Boothroyd

555 Engineering Applications of Mathematical Programming (1, 3) Sensitivity analysis and pricing problems, practical problems in degeneracy and duality, decomposition methods for large-scale systems, applied convex, integer, nonlinear, and quadratic programming methods. An introduction to stochastic programming. (Lec. 3) Pre: 432 or permission of instructor. In alternate years. Staff

565 Theory of Scheduling (II, 3) Sequencing problems, finite sequencing for a single machine n/m job shop problems with analytical and heuristic procedures, networks applied to scheduling, queuing systems in scheduling, probabilistic scheduling problems. Survey of selected literature. (Lec. 3) Pre: 432 or permission of instructor. In alternate years. Next offered 1995-96. Shao

591, 592 Special Problems (I and II, 1–6 each) Advanced work under supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. Staff

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

610 Topics in Applied Queuing Theory (1, 3) Poisson and Erland queues, imbedded chains, M/G/1 and G/M/1 queues, and related topics in queuing theory. Analysis of a wide variety of queues with an applications orientation. (Lec. 3) Pre: 433 or permission of instructor. In alternate years. Next offered 1995-96. Staff

634 Design and Analysis of Industrial Experiments (II, 3) Further development of topics in analysis of variance. Randomized blocks, Latin squares and related designs, factorial experiments, confounding and fractional replications, and split-plot designs. Design and analyses of engineering experiments. (Lec. 3) Pre: 533. Staff

660 Methods of Optimization (II, 3) Methods of optimization: indirect, direct elimination; climbing. Geometric programming. Problems and other topics in applied optimization. (Lec. 3) Pre: CSC 500 or permission of instructor. In alternate years. Next offered 1995-96. Staff

691, 692 Advanced Special Problems in Industrial Engineering (I and II, 1-6 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson, May be repeated for a maximum of 12 credits, Staff

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U only. Staff

Insurance (INS)

Chairperson: Associate Professor Dash (Finance and Insurance)

301 Fundamentals of Risk Management and Insurance (I and II, 3) Basic course in risk management and insurance. Emphasis on personal risk management and the personal lines coverages: homeowner's insurance, personal automobile insurance, and basic life insurance policies. (Lec. 3) Proficiency test available. Staff

- 414 Commercial Property and Liability Insurance (1, 3) Analysis of commercial property and liability risk exposures and their related coverages. Coverages includes general property and liability insurance and specialized topics for marine, fidelity, surety, and professional liability exposure. (Lec. 3) Not for graduate credit. Staff
- **425** Life Insurance (II, 3) Analysis of the many types of life insurance and health insurance contracts, computation of premiums and reserves, and contract interpretation. Included is an analysis of the uses of life insurance contracts. (Lec. 3) Note: This course is preparation for the Rhode Island state licensing examination in life and accident and health insurance and for Part I of the charter life underwriter examination. Not for graduate credit. Staff
- 433 Social Insurance (1, 3) Analysis of the network of state and federal economic security programs including the OASDHI system, unemployment compensation, temporary disability programs, and the workers' compensation system. (Lec. 3) Pre: ECN 201 and 202, or permission of instructor. Staff
- 471 Topics in Insurance (II, 3) Analysis of selected topics and current issues in the insurance marketplace. Topics will vary from semester to semester. (Seminar) Pre: FIN 331, INS 301, 313, and 325, or permission of instructor. Staff
- **491, 492 Directed Study** (I and II, 3 each) Directed readings and research work including insurance problems under the supervision of a staff member. (Independent Study) Pre: permission of instructor and junior or senior standing. Staff
- 493 Internship in Insurance (I or II, 3) Approved, supervised work experience with participation in management and problem solving related to insurance. Fifteen working days (or 120 hours). (Practicum) Pre: junior standing and proposal approved by the College of Business Administration. May be repeated for credit. Not for graduate credit in insurance. S/U only. Staff
- 691, 692 Directed Study in Insurance (I and II, 1-3 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. Staff
- 699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: enrollment in Phase III of the Ph.D. program in business administration. S/U credit.

Irish (IRE)

Chairperson: Professor Grandin (Modern and Classical Languages and Literatures)

- 391 Irish Literature in Translation to 1607 (1, 3) Reading and analysis in English of Irish Gaelic literature through the Classical Age. (Lec. 3) Next offered fall 1996, McNab (F)
- 392 Irish Literature in Translation from 1608 (1, 3) Reading and analysis in English of Irish Gaelic literature from the end of the Classical Age through the Gaelic Revival. (Lec. 3) Next offered spring 1997. McNab (F)

Italian (ITL)

Section Head: Professor Trivelli

- 101 Beginning Italian I (I and II, 3) Elements of the language, pronunciation, grammar, inductive reading; exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Italian is required. Staff (F)
- 102 Beginning Italian II (I and II, 3) Continuation of 101. (Lec. 3) Pre: 101 or equivalent. Staff (F)
- 103 Intermediate Italian I (I and II, 3) Development of facility in reading texts of moderate difficulty, supplemented by further work in grammar, conversation, and composition. (Lec. 3) Pre: 102 or equivalent. Staff (F)
- 104 Intermediate Italian II (I and II, 3) Continuation of 103. (Lec. 3) Pre: 103 or equivalent. Staff (F)
- 105 Basic Conversation (I and II, 1) Practice in basic Italian conversation skills. (Lec. 1) Pre: credit or concurrent enrollment in 103 or 104. May be repeated once for maximum of 2 credits. Staff
- 205, 206 Conversation and Composition (I and II, 3 each) Intensive course in conversation and composition. Promotes facility in speaking and understanding idiomatic Italian. (Lec. 3) Pre: 104 or permission of chairperson. Staff
- 301, 302 Civilization of Italy (I and II, 3 each) The most important aspects of Italian civilization. 301: From the Middle Ages to the end of the Renaissance. 302: From the seventeenth century to the present. (Lec. 3) Pre: 205 or 206 or permission of chairperson. Staff
- 305 Advanced Conversation and Composition (I or II, 3) Intensive practice in spoken and written Italian. (Lec. 3) Pre: 205 or 206 or permission of choirperson. Staff

- 309 Techniques of Translation (I or II, 3) Principles and techniques of translating written Italian into English and vice versa. Text materials of different types used in practical work: scientific, journalistic, business, and literary language. (Lec. 3) Pre: 205 or 206 or permission of chairperson. Viglionese
- 315 Italian Cinema (I or II, 3) Representative Italian films and their directors through viewing and discussions of films, lectures, and readings. (Lec. 3) Pre: 205 or 206 or permission of chairperson. Viglionese
- 325, 326 Introduction to Italian Literature (/ and II, 3 each) Appreciation of literature. Representative texts of Italian narrative, drama, and lyric poetry. Elements of the methods of criticism. (Lec. 3) Pre: 205 or 206 or permission of chairperson. Staff (A)
- 391, 392 Masterpieces of Italian Literature (I and II, 3 each) Reading in English translation of selected Italian authors of greatest significance. 391: Medieval and Renaissance. 392: Post-Renaissance to twentieth century. (Lec. 3) Not for major credit in Italian. Sillanpoa (A) (F) for 391; (A) for 392.
- 395 Dante's Divine Comedy (1 or II, 3) Reading in English translation of Dante's chief work. (Lec. 3) Not for major credit in Italian. In alternate years. Viglionese (A) (F)
- 408 The Italian Language (I or II, 3) Advanced study of the structure of the Italian language. Analysis of linguistic elements as found in representative authors from the thirteenth to twentieth century. (Lec. 3) Pre: one 300-level course or permission of instructor. In alternate years. Next offered spring 1997. Viglionese
- 455 Selected Italian Authors (I or II, 3) Works of one or more major authors of Italian literature. Specific author(s) are designated the semester before the course is given. (Lec. 3) Pre: one 300-level course or permission of instructor. In alternate years. Next offered fall 1996. Sillanpoa
- 465 Topics in Italian Literature (1 or 11, 3) Special topics or themes in Italian literature not treated or emphasized in other courses. (Lec. 3) Pre: one 300-level course or permission of instructor. In alternate years. Next offered spring 1996. Trivelli
- 480 Business Italian (I or II, 3) Study of concepts and terminology relating to the Italian business world. (Lec. 3) Pre: junior standing, credit or concurrent enrollment in at least one 300-level Italian course, or permission of instructor. Next offered spring 1997. Trivelli

481 The Works of Dante Alighieri (1 or 11, 3) Dante's works with special attention given to analysis and interpretation of the Divine Comedy from the social, religious, philosophical, and political viewpoints of the Middle Ages. (Lec. 3) Pre: one 300-level course or permission of instructor. In alternate years. Next offered 1996-97. **Viglionese**

497, 498 Directed Study (I and II, 3 each) Designed particularly for the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of project by a staff member and approval of chairperson. Staff

Japanese (JPN)

Chairperson: Professor Grandin (Modern and Classical Languages and Literatures)

101 Beginning Japanese I (I and II, 3) Fundamentals of grammar and pronunciation, exercises in reading, writing, and conversation. (Lec. 3) Pre: no prior Japanese is required. Staff (F)

102 Beginning Japanese II (I and II, 3) Continuation of 101. (Lec. 3) Pre: 101 or equivalent. Staff (F)

103 Intermediate Japanese I (I and II, 3) Development of facility in reading narrative and expository prose; exercise in grammar, listening comprehension, and speaking. (Lec. 3) Pre: 102 or equivalent. Staff (F)

104 Intermediate Japanese II (I and II, 3) Continuation of 103. (Lec. 3) Pre: 103 or equivalent. Staff (F)

Journalism (JOR)

Chairperson: Professor Luebke

110 Introduction to the Mass Media (I and II, 3) Surveys newspapers, magazines, radio, movies, television, advertising, and emerging technologies. Examines economic and news functions of each. Considers First Amendment, legal and ethical problems, restrictions, and social consequences of media. (Lec. 3) Recommended for nonmajors. Not for major credit in journalism. Staff (L)

115 Foundations of American Journalism (I and II, 3) Introduction to basic theories and principles of American journalism, and some of the major issues journalists confront. Examines news media audiences, effects, freedom, and responsibility. (Lec. 3) For journalism majors only. Staff

210 History of American Journalism (1, 3) Development of American newspapers, magazines, and broadcast industry with analysis of the ideas that have changed American journalism. Exploration of the journalists' experience at periods in American history; the effects of economic and social changes on the press. (Lec. 3) Pre: 110 or 115 or permission of instructor. In alternate years. Next offered fall 1997. Staff

211 History of Broadcasting (1, 3) Survey of broadcasting. Examines its pioneers and the impact of significant historical events as covered by radio and television. Considers the origins of modern news shows, talk-show formats, magazine broadcasts, and quiz shows. (Lec. 3) Pre: 110 or 115. In alternate years. Next offered fall 1996, Staff

220 Media Writing (I and II, 3) An introduction to writing for newspapers, magazines, broadcasting, and public relations. Includes consideration of objectivity, information gathering, language use, clarity and style, legal and ethical concerns. (Lec. 2, Lab. 2) Pre: WRT course with a grade of C or better, passing a departmentally administered entrance exam, ability to type. Staff

230 Introduction to Radio and Television News (I and II, 3) Beginning course in the principles and techniques of radio and television news gathering and writing. Stress is placed on copy formats, broadcast style, and basic production techniques. Frequent out-of-class and off-campus assignments. (Lec. 2, Lab. 2) Pre: 220 with a grade of C or better. Staff

310 Mass Media Law (1, 3) Role of government and the law in the communication of news, including basic laws affecting freedom of the press, journalists' privileges and responsibilities, privacy, broadcasting, and advertising. Case studies. (Lec. 3) Pre: junior standing and 110 or 115 and one 300-level journalism skills course or permission of instructor. Staff

311 Media Criticism in America (1 or II, 3) Examines news media performance in the United States by studying the works of media critics, both historical and contemporary. Practice in media monitoring and writing media criticism. (Lec. 3) Pre: 110 or 115 or permission of instructor. Next offered spring 1997. Staff

313 Other Voices: Alternative Media in the United States (II, 3) Critical analysis of nontraditional media in the United States, including black, religious, feminist, gay and lesbian press, as well as broadcast stations operated by and for minority groups. (Lec. 3) Pre: 110 or 115. In alternate years. Next offered spring 1996. Staff

320 Public Affairs Reporting and Writing (1 or II, 3) Practice in gathering and writing news of public affairs, including local and state government, courts, law enforcement. Introduces public records, alternatives to straight news story, interviewing techniques, rewriting. Frequent out-of-class and off-campus assignments. (Lec. 2, Lab. 2) Pre: 220 with a grade of C or better.

321 Magazine Article and Feature Writing (I and II, 3) Planning, researching, and writing articles and feature stories for magazines and newspapers. Discussion of markets, freelance and job opportunities. Articles written and submitted to publications. (Seminar) Pre: 220 with a grade of C or better, or permission of instructor. Staff

330 Television News (1, 3) Intermediate course in news gathering and writing for television. Emphasizes reporting, writing, anchoring, and producing. Group work leads to production of a half-hour studio newscast. Frequent out-of-class and off-campus assignments. (Lec. 2, Lab. 2) Pre: 230 with a grade of C or better. Staff

331 Electronic News Gathering (II, 3) Skill development in the visual technology of television news. Techniques of single-camera field production are stressed. Introduction to fundamentals of video tape editing; practice in ENG photography and editing. Frequent out-of-class and offcampus assignments. (Lec. 2, Lab. 2) Pre: 230 with a grade of C or better. Staff

340 Public Relations (1, 3) Principles and procedures in public relations: emphasis on role of the public relations practitioner as a specialist in communication; analysis of publications produced as a part of public relations. (Lec. 2, Lab. 2) Pre: junior standing and 220 with a grade of C or better. Staff

341 Editing for Publication I (1, 3) An introduction to editing for the print media, including newspapers, magazines, and public relations. Focuses on taking work written by others and preparing it for publication. Includes consideration of legal and ethical issues. (Lec. 2, Lab. 2) Pre: 220 with a grade of C or better. Staff

342 Editing for Publication II (II, 3) An introduction to designing and producing for the print media, including newspapers, magazines, and newsletters. Extensive use of computers and desktop-publishing technology. Includes consideration of legal and ethical issues. (Lec. 2, Lab. 2) Pre: 341 with a grade of C or better. Staff

- 345 Journalism Internship (I and II, 3 or 6) Supervised experience in: (a) reporting and writing; (b) editing; (c) radio news; (d) television news; (e) public relations. Requires a minimum of 120 hours (3 credits) or 240 hours (6 credits). Weekly one-hour class meeting. Maximum of 6 credits allowed toward graduation. (Practicum) Pre: journalism majors and minors and public relations minors only. Prerequisite courses depend on internship. Permission of instructor and application required. S/U only. Staff
- 410 Mass Media Issues (II, 3) Critical analysis of current issues affecting journalists and society in general, based on readings, videotapes, case studies, and discussion. Emphasis on ethics and decision making. (Lec. 3) Pre: 110 or 115 and senior standing or permission of instructor. Staff
- 415 Perspectives on Reporting (I, 3) Critical assessment of reporting through the reading and analysis of various types of reporting, including literary journalism, muckraking, investigative reporting, and New Journalism. (Seminar) Pre: 110 or 115 and junior standing. Staff
- 420 Advanced Reporting and Writing (II, 3) Planning, developing, and writing complex news stories for publication. Emphasizes storyidea generation, information gathering from multiple sources, using public records and documents, and advanced interviewing techniques. Frequent out-of-class and off-campus assignments. (Lec. 2, Lab. 2) Pre: junior standing and 320 with a grade of C or better. Staff
- 430 Advanced Television News (II, 3) Practical experience in longer, more specialized news formats. Students write, videotape, and edit television pieces throughout the semester, leading to a project of documentary length. (Lec. 2, Lab. 2) Pre: 320 and 330 or 331, each with a grade of C or better. Staff
- 440 Independent Study (I and II, 1-3) Individual reading programs, research, or project in journalism or mass media. (Independent Study) Pre: junior standing and submission to chairperson of proposal signed by supervising faculty member.
- 441 Public Relations Practices (II, 3) Practical application of traditional PR methods in solving problems in a variety of markets. Explores fundamental agency operations, client-agency relationships. Combines practical experience with individual projects, programs, and campaigns. (Practicum) Pre: 340. Staff
- 445 Special Topics in Journalism (1 or 11, 3) Subject, course content, and years offered will vary according to expertise and availability of

instructors. (Independent Study) Pre: permission of instructor. May be repeated for credit with different topic. Staff

Labor and Industrial Relations (LRS)

Director: Professor Schmidt

432 Industrial Sociology See Sociology 432.

- 520 Labor Union Government and Structure (I or II, 3) Structure, functions, responsibilities, and programs of unions and union leadership. Emphasis on policies and decision making. Evaluation of labor and management performance. Consideration of administrative problems associated with growth of white collar unions. (Lec. 3) Pre: credit or concurrent enrollment in 544. Molloy
- 521 (or PSC 521) International and Comparative Trade Unions and Labor Relations (1 or 11, 3) Comparative labor and industrial relations systems, including union, management, and government functions and roles; also the functions of international organizations in labor relations. (Lec. 3) Pre: 544 or permission of Labor Research Center director, Rothstein or Schmidt
- 526 (or ECN 526) Economics of Labor Markets (I or II, 3) The theory of labor market behavior, and application of theory for public policy analysis in areas such as discrimination, unemployment, and education. (Lec. 3) Pre: ECN 201 and 202 or 590 or equivalent. Staff
- 531 Employment Law (I or II, 3) Analysis of legislation protecting worker health, employment, income security, including OSHA, workers' compensation, equal opportunity, fair labor standards, Walsh-Healy and Davis-Bacon, pension funds, unemployment compensation, and social security. (Lec. 3) Pre: permission of Labor Research Center director. Tabor
- 533 Negotiating Pension, Health, and Employee Assistance Programs (I, II, or SS, 3) An analysis of employee assistance plans (EAPs), health fringe benefits, and pension plans and their negotiation within both private and public sectors. (Lec. 3) Pre: permission of instructor and Labor Research Center director. Staff
- 534 (or ECN 534) Information Sources and Uses in Labor Relations and Labor Economics (I or II, 3) Analysis and use of data and information sources specific to the professional fields of labor and industrial relations and labor economics. A major project utilizing personal computer software is required. (Lec. 3) Pre: 526 and BAC

- 500 and 530 or permission of instructor. Not for graduate credit for M.B.A. or M.S. in accounting students. Staff
- 541 Labor Relations Law (1 or II, 3) Legal framework for private and public sector collective bargaining. Regulation of activities with emphasis on individual rights, collective rights, and policy considerations of federal and state courts, the NLRB, and state labor boards in determining society's rights. Case studies. (Lec. 3) Pre: 544 or permission of instructor. Grossman
- 542 Labor Relations and Collective Bargaining (I or II, 3) Collective bargaining literature, theories, and practice. Bargaining approaches, techniques, and dynamics will be stressed through the analysis of comprehensive case studies. (Lec. 3) Pre: 541 and 544 or permission of Labor Research Center director. Schmidt
- 543 Labor Relations and Collective Bargaining: Public Sector (I or II, 3) Public sector (state, municipal, federal, police, fire, K-12 education, and higher education) collective bargaining theory, practice, and legal foundations. Comprehensive case studies. (Lec. 3) Pre: credit or concurrent enrollment in 542 or permission of Labor Research Center director. Grossman
- 544 (or HIS 544) Colloquium in Worker History (I or II, 3) Selected topics in American worker history with an emphasis on the most recent literature in the field. (Sem. 3) Pre: graduate standing or permission of instructor. Molloy
- 545 Labor-Dispute Settlement (I or II, 3) Reading, procedures, and cases in the settlement of labor disputes in both private and public sectors. Emphasis on arbitration, mediation, and fact finding. (Lec. 3) Pre: 541 and 542 or permission of Labor Research Center director. Staff
- 546 Alternative Dispute Resolution Processes and Applications (1, 11, or SS, 3) Examination of mediation, fact finding, arbitration, and other conflict resolution processes as alternatives to litigation in a variety of dispute situations; e.g., community, environmental, divorce, landlordtenant, prison, racial, commercial. (Lec. 3) Pre: permission of instructor. Staff
- 579 (or EDC 579) Labor Relations and Collective Bargaining in Education (1, 11, or SS, 3) Collective bargaining in public and private educational sectors, K-12, higher education; literature, theory, practice, and legal foundations in education. Comprehensive case studies will be used. (Lec. 3) Croasdale
- 580 Professional Seminar: Labor and Industrial Relations (II, 3) Advanced labor relations seminar of variable coverage and focus; ad-

justed yearly to consider most recent labor relations developments. Major research paper required. (Sem. 3) Pre: final semester graduate standing in labor and industrial relations and permission of Labor Research Center director. Schmidt

581 Internship: Labor and Industrial Relations (1, 11, and SS, 3-6) Variable length internship with a trade union, a public or private sector personnel or industrial relations department, or a governmental administrative or regulatory agency, under the supervision of both an LRC faculty member and a member of the affiliated organization. May be taken as one 6-credit unit or two 3-credit units. (Practicum) Pre: graduate standing in labor and industrial relations and permission of Labor Research Center director. Schmidt

590, 591 Directed Readings and Research in Labor and Industrial Relations (I, II, and SS, 3 each) Readings and research under the direction of LRC-associated faculty to meet individual student requirements. (Independent Study) Pre: graduate standing in labor and industrial relations and permission of Labor Research Center director and instructor. Staff

Landscape Architecture (LAR)

Chairperson: Professor Hull (Plant Sciences)

201 Survey of Landscape Architecture (1, 3) Introduction to landscape design theory and composition as an applied art form. (Lec. 3) Hanson (A)

202 Origins of Landscape Development (II, 3) Examines the impact of environment, social history, philosophy, art, and literature on architecture and landscape development from ancient to modern times. Emphasis on European Renaissance through contemporary United States. (Lec. 3) Hanson (L)

243 Landscape Architecture Graphics (1, 4) Introduction to landscape graphic communication techniques with emphasis on design and construction drawing and perspective illustration. (Lec. 2, Studio 4) Simeoni

244 Basic Landscape Architectural Design (II, 4) Introduction to the development of outdoor space with emphasis on the design process and the manipulation of spatial volumes. (Lec. 2, Studio 4) Pre: 243. Simeoni

300 Computers in Landscape Architecture (II, 3) Intensive course in computer usage for landscape architects. Focus on the application of .

landscape architecture computer-aided design software to project development. (Lec. 2, Studio 2) Pre: junior standing in landscape architecture. Simeoni

343 Landscape Architecture Studio I (1, 4) Landscape concepts in graphic form. Emphasis on preparing landscape plans for small- to intermediate-scale properties. Students study in a professional studio environment. (Lec. 2. Studio 4) Pre: 201, 202, and 244, Intended for landscape architecture majors only. Staff

344 Landscape Architecture Studio II (II, 4) Continuation of landscape concepts and graphics. Emphasis on drawing landscape plans for intermediate- to larger-scale properties. Advanced rendering. (Lec. 2, Studio 4) Pre: 343. Intended for landscape architecture majors only. Hanson

345 Landscape Construction I (I, 4) A comprehensive survey of construction materials and their uses in landscape construction. (Lec. 2, Studio 4) Pre: 244. Intended for landscape architecture majors only. Green

346 Landscape Construction II (II, 4) The study of soil adjustment; grading, drainage, cut and fill, reshaping of earth surfaces. (Lec. 2, Studio 4) Pre: 345 and NRS 451. Intended for landscape architecture majors only. Green

353 (or PLS 353) Landscape Plants I (1, 3) Identification and description under fall conditions; classification and adaptation of the important trees and shrubs including broadleaf evergreens and their value in ornamental plantings. (Lec. 1, Lab. 4) Pre: BIO 101 or BOT 111. Simeoni

354 (or PLS 354) Landscape Plants II (II, 3) Identification and description under winter and spring conditions; classification and adaptation of the coniferous evergreens, vines, and groundcovers and their value in ornamental plantings. (Lec. 2, Lab. 2) Pre: 353. Simeoni

399 Internship See Plant Sciences 399.

443 Planting Design (I, 4) The use of plant materials in landscape composition. Combines spatial definition of various land uses with plant selection. Preparation of plans, details, and specifications. (Lec. 2, Studio 4) Pre: 344 and 354. Intended for landscape architecture majors only. Not for graduate credit. Hanson

444 Landscape Architecture Studio III (1, 4) Relationships between principles of landscape design and elements of the environment that contribute to development of ecologically based plans. Client conferences and specifications for woody ornamental plants. (Lec. 2, Studio 4) Pre: 344 and 346. Intended for landscape architecture majors only. Green

445 Landscape Architecture Studio IV (II, 4) Study of comprehensive landscape architectural projects. Coordination of research, preparation of contract documents, and office procedures. (Lec. 2, Studio 4) Pre: 443 and 444. Intended for landscape architecture majors only. Not for graduate credit. Staff

447 Professional Landscape Architectural Practice (II, 3) Professional practice, ethics, marketing design services, preparation of contract documents, and effective time management. (Lec. 3) Pre: senior standing in landscape architecture. Not for graduate credit. Green

491, 492 Special Projects and Independent Study

See Plant Sciences 491, 492.

Languages (LAN)

Chairperson: Professor Grandin (Modern and Classical Languages and Literatures)

191 Beginning Foreign Language I (I and II, 3) Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation in a foreign language not included in regular departmental offerings. (Lec. 3) Pre: no prior experience in a specific language is required. May be repeated for credit for different languages. Choice of specific language to be taught subject to availability of staff and student demand. Staff (F)

192 Beginning Foreign Language II (I and II, 3) Continuation of 191. (Lec. 3) Pre: 191 or equivalent in same language as 191. May be repeated for credit for different languages. Choice of specific language to be taught subject to availability of staff and student demand. Staff (F)

193 Intermediate Foreign Language ! (I and II, 3) Development of facility in speaking, listening comprehension, writing, and reading texts of moderate difficulty in a language not included in regular departmental offerings. (Lec. 3) Pre: 192 or equivalent in the same language as 192. Choice of specific language to be taught subject to availability of staff and student demand. Staff (F)

194 Intermediate Foreign Language II (I and II, 3) Continuation of 193. (Lec. 3) Pre: 193 or equivalent in the same language as 193. Choice of specific language to be taught subject to availability of staff and student demand. Staff (F)

Latin (LAT)

Chairperson: Professor Grandin (Modern and Classical Languages and Literatures)

101 Beginning Latin I (I and II, 3) Latin grammar and syntax. Exercises in reading prose. (Lec. 3) Pre: no previous Latin is required. Staff (F)

102 Beginning Latin II (I and II, 3) Continuation of 101. (Lec. 3) Pre: 101 or equivalent. Staff (F)

301 Intermediate Latin (I, 3) Grammar review; readings such as Petronius' Satyricon. (Lec. 3) Pre: 102 or equivalent. Suter (F)

302 Intermediate-Advanced Latin (II, 3) Study of Latin texts from different time periods and different genres; syllabus changes on a four-year rotational basis. (Lec. 3) Pre: 301 or permission of instructor. May be repeated for a maximum of 12 credits with different topics. Suter (F)

310 Latin Across the Curriculum (1 or 11, 1) Reading of original Latin texts and discussion in conjunction with courses throughout the University curriculum. Designed to maintain language skills and to enrich study of different subjects by using texts in the original language. (Lec. 1) Pre: 301 or permission of instructor. Suter, Zeyl, Hollinshead

497, 498 Directed Study (I or II, 1-6 each) Individual readings and research. (Independent Study) Pre: acceptance of a project by a staff member; approval of chairperson. May be repeated for credit with different topic. Staff

Latin American Studies (LAS)

Committee Chairperson: Associate Professor Morín

397 Directed Study for Senior Research Project (1, 3) Research in a particular area of Latin American studies. Project must be approved by the LAS Committee. (Independent Study) Pre: approval of LAS Committee and instructor. Staff

The following are related courses offered in the Departments of Communication Studies, Economics, History, Modern and Classical Languages and Literatures, Political Science, and Sociology and Anthropology.

Anthropology

303 New World Prehistory

315 Cultures and Societies of Latin America

470 Problems in Anthropology

Communication Studies

337 Intercultural Communication

Economics

338 International Economics

363 Economic Growth and Development

History

180 Introduction to Latin American Civilization

382 History of Modern Latin America

391 Directed Study or Research

508 Seminar in Asian or Latin American History

Political Science

201 Introduction to Comparative Politics

431 International Relations

432 International Government

Portuguese

335, 336 Topics in the Literature of the Portuguese-Speaking World

497, 498 Directed Study

Spanish

305 Early Spanish-American Literature and

306 Modern Spanish-American Literature and Culture

393 Modern Hispanic-American Literature in **Translation**

470 Topics in Hispanic Literature

488 Spanish-American Poetry and Drama

489 The Spanish-American Narrative

497, 498 Directed Study

570 Topics in Hispanic Literature and Culture

572 Evolution of Spanish-American Culture and

574 Interpretations of Modern Spanish-American Thought

590 The Hispanic Presence in the United States

Letters (LET)

Coordinator: Associate Dean Dvorak, Arts and Sciences

151 Topics in Letters (I or II, 3) Study of the history of thought, of the search for values, of the attempt to define the human condition, as reflected in written texts, both past and present. (Seminar) May be repeated for credit with different topic. Staff (L)

351 Topics in Letters (I or II, 3) Study of the history of thought, of the search for values, of the attempt to define the human condition, as reflected in written texts, both past and present, at an advanced level. (Seminar) Pre: junior standing. May be repeated for credit as often as the topic changes. Staff (L)

Library and Information Studies (LSC)

Acting Director: Professor Tryon

Students in good standing may take up to six hours of graduate-level Library and Information Studies courses in their senior year with the permission of the Director of the Graduate School of Library and Information Studies.

501 Foundations of Library and Information Science (I and II, 3) Overview of the field covering the language and literature of librarianship; the history and functions of libraries; the nature of various types of libraries, the profession, operations, and new technologies. (Lec. 3) Pre: graduate standing or permission of instructor. Eaton, Zipkowitz, and Carson

502 Library Administration (I and II, 3) The scientific analysis of library administration ranging from the community survey and formulation of goals and objectives to case studies on public and technical services, staffing and personnel, and buildings. (Lec. 3) McCarthy and Zipkowitz

503 Collection Development (I and II, 3) Introduction to process, practices, and problems of collection building, maintenance, and evaluation regardless of format or subject of material, type of institutional setting, or community or client group served. (Lec. 3) McCarthy and Tryon

504 Reference and Information Services (I and II, 3) Practical experience in the use of basic information sources with readings and discussion on the philosophy and administrative aspects of reference work. (Lec. 3) Gilton

505 Organization of Library Materials (I and II, 3) Introduction to the principles and practice of descriptive and subject cataloging and classification systems with an introduction to Library of Congress classification. Includes OCLC searching and tagging. (Lec. 3) Zipkowitz

506 Technical Services (I or II, 3) Principles and policies in the acquisition, organization, conservation, and circulation of materials in libraries and information centers. Includes examination of automation of library processes. (Lec. 3) Pre: 501. Zipkowitz

510 History of Books and Printing (I or II, 3) The art and craft of book production through the ages; printers, methods, and materials with consideration given to the role of the book in cultural development. (Lec. 3) Tryon

- 512 History of Libraries and Librarianship (I or II. 3) The development of libraries and librarianship within a cultural, social, and economic context from antiquity to the present. (Lec. 3) Tryon
- 513 Intellectual Freedom and Censorship (I or II, 3) Historical development and current status of the concept of intellectual freedom and the restraints that past and present societies have imposed on it. Special attention given to the librarian's role in defense of intellectual freedom. (Lec. 3) McCarthy and Tryon
- 520 School Library Media Services (I or SS, 3) The role of the library media specialist as teacher, information specialist, and instructional consultant, with emphasis on creating instructional programs and services in schools. Summer or fall semester prior to practicum. (Lec. 3) Pre: completion of 21 hours including core courses, 501-505, or permission of instructor. McCarthy
- 521 Public Library Service (I or II, 3) Methods for management and planning in public libraries for creating programs, and for evaluating services and their effects on the public served. The identification of alternative solutions to budgeting and personnel management problems. (Lec. 3) Pre: 502. Zipkowitz
- 522 College and University Library Service (I or II, 3) Study of the functions, organization, management, and services of college and university libraries. (Lec. 3) Pre: 502. Tryon and Zipkowitz
- 523 Special Library Service (1 or II, 3) Organization, management, and procedures as they apply to special libraries with particular emphasis on the diversity of special library functions. (Lec. 3) Pre: 502. Stankus
- 524 Library Instruction: Philosophy, Methodology, and Materials (II, 3) An introduction to all aspects of instructing a diverse clientele in effective library use. Philosophy, cognition aspects, methodologies, media and administration, and coordination and evaluation of library instruction will be considered. (Lec. 3) Pre: 504 or permission of instructor. Gilton
- 528 Media in the Library (I or II, 3) The role of multimedia materials in library and information settings, including the selection, evaluation, organization, and utilization of audiovisual hardware and software, and an introduction to emerging communication technologies. (Lec. 3) Carson
- 529 Theory and Production of Library Media Communications (I or II, 3) Introduction to the design and production of graphic, photo-

- graphic, audio, video, and computer-based materials for library and information environments through the application of basic communication, perception, and learning theories. (Lec. 2, Lab. 2) Carson
- 530 Reading Interests of Children (I or II, 3) A survey of children's literature as it relates to the reading interests and information needs of children. Emphasis is on collection building, reference, reading guidance, and book promotion. (Lec. 3) Pre: 503 or permission of instructor. Eaton
- 531 Reading Interests of Young Adults (I or II, 3) Overview of young adult literature in the context of the special interests and information needs of adolescence. Emphasis on the building, use, and promotion of the young adult collection. (Lec. 3) Pre: 503 or permission of instructor.
- 535 Public Library Services to Children and Young Adults (II, 3) Public library services to children and young adults, with emphasis on the development of programs to meet library goals and objectives. (Lec. 3) Pre: 502 or permission of instructor. Eaton
- 536 Storytelling (I or II, 3) Selection, adaptation, and presentation of stories for children of all ages, including attention to sources of materials, planning the story hour, and training and practice in the art of storytelling. (Lec. 3) Daigneault
- 537 Health Sciences Librarianship (II, 3) Serves as an introduction to the field. Covers the literature, vocabulary, computer applications, reference tools, information retrieval, and environments relating to health sciences libraries. (Lec. 3) Pre: 502 and 504 or permission of instructor. Kellerman
- 538 Law Librarianship (1, 3) Introduction to legal bibliography and research and to a broad range of problems involved in the administration and operation of various kinds of law libraries. (Lec. 3) Pre: 502 and 504 or permission of instructor. Svengalis
- 539 Business Reference (1, 3) An introduction to all aspects of business reference sources and information services, including unique statistical and investment information on companies and industries. (Lec. 3) Pre: 504. Gilton
- 540 Library Materials in the Humanities (I or II, 3) Library resources in the humanities, including the major works, serial publications, and reference and bibliographical materials. (Lec. 3) Pre: 503 and 504. Gilton

- 541 Library Materials in the Social Sciences (1 or II. 3) Library resources in the social sciences, including the major works, serial publications, and reference and bibliographical materials. (Lec. 3) Pre: 503 and 504. Tryon
- 542 Library Materials in Science and Technology (I or II, 3) Library resources in science and technology, including the major works, serial publications, and reference and bibliographical materials, (Lec. 3) Pre: 503 and 504, Staff
- 543 Government Publications (I or II, 3) Survey of the publishing activities and publications of national, state, and local governments with emphasis on the publications of the United States government. (Lec. 3) Pre: 504. Gilton
- 544 Information Science for Librarians (I or II, 3) An introduction to the interdisciplinary study of information science related to information (data) collection, analysis, processing, transmission, utilization, and communication, with emphasis on bibliographic data and its retrieval in modern libraries and information centers. (Lec. 3) Pre: 502 and 504 or permission of instructor.
- 545 Indexing and Abstracting (I, II, or SS, 3) Principles and techniques of indexing for the purpose of information storage and retrieval. Includes periodical indexing, book indexing, automatic indexing, abstracting, and thesaurus construction. (Lec. 3) Pre: 504. Kellerman
- 546 Computer Systems in Library Automation (I or II, 3) Introduction to principles of systems analysis and the tools of analysis. Study of computer hardware and software and the application of new technologies to library operations and services. (Lec. 3) Pre: 501 or permission of instructor. Walsh
- 547 Online Searching and Services (I or II, 3) Introduction to computerized information retrieval and the provision of computerized information services in libraries, including handson experience. (Lec. 3) Pre: 501 and 504. Staff
- 548 Microcomputer Applications in Library and Information Services (I or II, 3) Selection, evaluation, and integration of hardware and software specific to functions of different types of libraries and information centers. (Lec. 3) Pre: 501 or permission of instructor. Carson
- 549 Information Storage and Retrieval (I or II, 3) Theory and methods of analyzing, storing, and retrieving primarily bibliographic information and their applications in libraries and information services. Operation, monitoring, and evaluation of manual and computerized retrieval systems. (Lec. 3) Pre: 501. Staff

550 Advanced Cataloging (I or II, 3) Theory and problems in descriptive and subject cataloging and classification with emphasis on the use of Library of Congress subject headings and classification. Includes editing of original and copy cataloging for OCLC. Emphasis is on microforms, serials, rare books, music and sound recordings. (Lec. 3) Pre: 505. Zipkowitz

561 Library Effectiveness: Research and Evaluation (1, 3) Introduction to types and methods of research, applications of published research and research techniques to the evaluation and improvement of library and information services. (Lec. 3) Pre: 15 hours of library science or permission of instructor. Eaton

562 Administration of Special Collections, Archives, and Manuscripts (1, 3) Principles and techniques for administering manuscript and archival repositories, including acquisition policies, appraisal criteria, methodology, and preservation practices. (Lec. 3) Pre: core courses or permission of instructor. Maslyn

564 Introduction to Library Preservation (1 or II, 3) Organization, management, principles, and techniques as they apply to the development and administration of a library preservation program. Includes causes of deterioration of materials, deacidification, and reformatting and selecting for preservation. (Lec. 3) Staff

565 Rare Book Librarianship (1 or 11, 3) Organization, management, principles, and techniques as they apply to the development and administration of rare book collections. (Lec. 3) Pre: 510 or permission of instructor. Tryon

571 Database Management Systems for Information Services (1 or II, 3) Provides concepts of database management systems (DBMS) for the design and use of bibliographic and nonbibliographic databases. Includes DBMS models, query processing, file organization; security, accuracy, and privacy of databases, and evaluation of DBMSs. (Lec. 3) Pre: 548 or equivalent knowledge and permission of instructor. Staff

591, 592, 593 Independent Work (By appt., 1-3 each) Supervised reading or investigation in areas of special interest to students who obtain written approval for such study prior to registration for the semester for which it is proposed. (Independent Study) Pre: 18 hours of library science with a B average. May be repeated for a maximum of 3 credits. Staff

595 Professional Field Experience (I and II, 1-3) Directed field experience applying theory to practice in libraries, information centers, and

related organizations under the joint supervision of a member of the faculty and the professional staff of the cooperating institutions. (Practicum) Pre: completion of at least 18 hours of library science with a B average. 45 hours per credit. May be repeated for a maximum of 3 credits. Staff

596 Professional Field Experience: School Library Media Practicum (II, 6-9) Directed field experience applying theory to practice in school library media centers under the joint supervision of a faculty member and the professional staff of the cooperating school. (Practicum) Pre: 520 and completion of at least 18 hours of library science with a B average. 45 hours per credit. McCarthy

597 Selected Topics (I and II, 3) Selected topics in library and information studies of current and special interest not covered in existing course offerings. Topics announced prior to each offering. (Independent Study) Pre: 501 or permission of instructor. Staff

Linguistics (LIN)

Section Head: Professor Rogers

100 Language in Society (I or II, 3) Topical approach to the study of language, varying from semester to semester and including, but not restricted to, such topics as the relationship of language to culture, society, behavior, geography, computers, and other languages. (Lec. 3) Staff

200 Language and Culture See Anthropology 200.

202 Introduction to the Study of Language Evolution (II, 3) The construction of theoretical models; the reconstruction of earlier stages of language, based on the structure of modern languages and their families. (Lec. 3) Pre: 200; 220, or ENG 330. Rogers (S)

220 (or APG 220) Introduction to the Study of Language (1 or II, 3) Introduction to the analysis and description of a language's sounds, forms, syntax, and meaning; the relationship of linguistics to other disciplines; and a survey of major schools of linguistic thought. (Lec. 3) Rogers and Arakelian (S)

302 Morphology and Phonology (I or II, 3) Analysis of phonological and morphological systems other than those of English; extensive practical and comparative exercises. (Lec. 3) Pre: 220 or ENG 330. Rogers

320 (or APG 320) Sociolinguistics (1, 3) Presentation of the major areas of micro- and macro-sociolinguistics: speech acts, registers, repertoires, language attitudes, social correlates of phonological and syntactic features and changes. (Lec. 3) Pre: 200 or 220. Rogers, Martin, and Pollnac

330 Dynamics of Language Distribution (II, 3) Geolinquistic survey of present-day distribution of languages and of factors affecting their spread and decline. Minority and colonial languages; language maintenance efforts; language contact phenomena. (Lec. 3) Pre: 220.

408 The German Language: Past and Present See German 408.

414 Romance Linguistics (II, 3) Evolution of the major literary Romance languages from late Latin with emphasis on phonology and morphology. The diffusion and dialectal fragmentation of Romance. (Lec. 3) Pre: 202 or FRN 205, SPA 205, ITL 205, or permission of section head. Some knowledge of Latin recommended but not required. Not for graduate credit. Rogers

420 Second Language Acquisition (II, 3) An evaluation of current trends and developments in the understanding of second language learning; analysis of second language acquisition research and its practical implications. (Seminar) Pre: 201 or EDC 312 or 3 credits of language courses numbered 300 or above, or permission of section head. Next offered spring 1996. Hammadou

431 Applied Linguistics in the Language Laboratory (1, 1) Principles of contrastive phonology and syntax and their application to the preparation, use, and evaluation of tape drills. Use of language laboratory equipment monitoring student exercises. Recommended for prospective teachers of language. (Lab. 2) Pre: 9 credit hours of language courses at the 300 level or above, or permission of section head. Staff

497, 498 Directed Study (I and II, 3 each) Individual research and reports on problems of special interest. (Independent Study) Pre: 220 and acceptance of project by staff member and approval of section head. Staff

The following are related courses offered in the Departments of Communicative Disorders, English, Modern and Classical Languages and Literatures, Philosophy, and Psychology.

CMD 373 Phonetics

CMD 375 Language Development

ENG 330 The Structure of American English

ENG 332 The Evolution of the English Language

ENG 336 The Language of Literature

ENG 337 Varieties of American English **ENG** 530 Studies in Language and Linguistics FRN 503 History of the French Language

408 The Italian Language PHL 440 Philosophy of Language **PSY** 388 The Psychology of Language

Literature in English Translation

Coordinator: Associate Professor Kuhn

The following courses are offered in the Department of Modern and Classical Languages and Literatures and may be used for major credit in comparative literature studies. They may not be used for major credit in English or languages. (CLA 391, 395, 396, 397 may be used for major credit in Classics; RUS 391, 392 may be used for major credit in Russian.)

Comparative Literature Studies

235 Modern Thought: Philosophy and Literature

250 Themes and Myths

335 Interdisciplinary Studies in Comparative Literature

450 Studies in Comparative Literature

Classics

ITL

391 Ancient Laughter: The Comic Tradition in Greece and Rome

395 Greek Mythology: Gods, Heroes, and Humans

396 Myths of Rome

397 Greek Myth and Tragedy

French

391 Literature to 1789 in Translation

392 Nineteenth-Century Literature in Translation

393 Twentieth-Century Literature in Translation

394 Literary Topics in Translation

German

392 Masterpieces of German Literature

391, 392 Masterpieces of Italian Literature 395 Dante's Divine Comedy

Russian

391, 392 Masterpieces of Russian Literature

391, 392 Spanish Literature in Translation 393 Modern Hispanic-American Literature in Translation

The following courses are offered in the Department of English and may be used for major credit in comparative literature studies and in English. They may not be used for major credit in languages.

English

160 Masterpieces of Literature 366 Greek and Roman Drama

367 The Epic

468 Traditions of the Continental Novel

560 Studies in European Texts

Literature in English translation courses and literature courses are offered in the Department of English and the Department of Modern and Classical Languages and Literatures, and constitute part of the offerings for a major in comparative literature studies.

Management (MGT)

Chairperson: Professor Sink

110 Introduction to Business (I and II, 3) Nature, philosophy, objectives, and scope of American business system. Emphasis on the interrelations of the functional areas. (Lec. 3) Not open to juniors and seniors in the College of Business Administration. Staff (S)

300 Introduction to Management and Supervision (1, 3) Functions of human resources management including group behavior, interpersonal relations, recruitment, and justice determination. Emphasis on developing analytical skills applied to personnel-related problems in organizational settings. (Lec. 3) Not open to business administration majors; no credit if 303 has been taken. Staff

301 Organization and Management Theory I (I and II, 3) Management processes, organizational theory and behavior, organizational structure, international business, ethics, and environmental analysis. Emphasis on developing conceptual and analytical skills. (Lec. 3) Staff

302 Organizational Behavior (II, 3) Introduction to organizational behavior; theory of human relations in industry; individual and group dynamics as well as motivational theories applied to current business issues, international business, and technological changes. (Lec. 3) Pre: 301. Staff

303 Personnel Administration (I or II, 3) Role of the personnel department in an organization. Employer-employee problems at various internal levels and their impact on the organization and its environment. Covers such areas as manpower planning, the recruitment process, training, employee relations, pension planning, and occupational safety in the public and private sectors. Cases and lectures. (Lec. 3) Pre: 301 recommended. Staff

306 Skills Development in Organizational Behavior (1, 3) Developing the managerial skills and competencies of leadership, motivation, conflict resolution, and interpersonal relations through dynamic cases, experiential exercises, and personal development sessions. (Lec. 3) Pre: 301, 302, or permission of instructor. Staff

321 Labor Problems (1: 3) Historical development of labor unions, changing composition of the labor force. Factors determining wage levels and employment in the firm and market. Analysis of mobility and occupational and regional wage differentials; the power of unions to raise wages; the role of investments in the human agent as a factor in economic growth. (Lec. 3) Pre: ECN 201 or permission of instructor. Staff

326 Office Technology Management (I or II, 3) Planning and using office automation systems, including word processing, office management, and communications. (Lec. 3) Pre: junior standing or permission of chairperson. Staff

380 Business and Society (1, 3) Contemporary environmental issues confronting domestic and international management—pollution, government regulation, insider trading, equal opportunity, business ethics—are investigated. (Lec. 3)

401 Women in Business and Management (II, 3) Analysis of sex-role behavior in the workplace. The history, current status, and future prospects of women and men in business and the organizational response to the changing work force. (Lec. 3) Pre: 301 recommended. Not for graduate credit. Beauvais or Cooper

402 Leadership and Motivation (I or II, 3) Examination of theory and research in the areas of leadership and motivation in organizational settings. Emphasis on application of theory in developing essential leadership skills within individuals and in creating effective motivational programs within organizations. (Lec. 3) Pre: 301, 302, or permission of instructor. Staff

407 Organization and Management Theory II (1, 3) Analysis of complex organizational situations emphasizing managerial problems dealing with structure, coordination, control, and integration. Conceptual skills for organizational analysis, including model and systems approaches. (Lec. 3) Pre: 301 or permission of instructor. Staff

408 Organization Development and Change (I or II, 3) Behavioral science applications to the planning of systematic organizational change and development. Theory, concepts, tech-

- niques, and cases for change agents and managers of change. (Lec. 3) Pre: 301, 407, or permission of instructor. Staff
- 410 Business Policy (I and II, 3) Case analysis is used to study strategic issues and problems of mission and goal setting, planning, implementing, and controlling in domestic and multinational firms. (Lec. 3) Pre: 301, ACC 202, FIN 301, MSI 309, MKT 301, BSL 333, senior standing in the College of Business Administration, or permission of instructor. Not for graduate credit. Staff
- 422 Labor Law and Legislation (II, 3) Federal and state labor relations statutes and court and agency decisions pertaining to private and public employment, regulations of trade unions, equal opportunity, wage and hour laws. (Lec. 3) Pre: 321 or permission of instructor. Staff
- 423 Labor Relations (II, 3) Public interest in labor relations and problems involved in collective bargaining. Major adjustments of public and private management to changes in labor policy of federal and state governments, community, and labor unions. (Lec. 3) Pre: 303. Not for graduate credit. Staff
- 426 Training and Development Theory and Practice (1, 3) Development of education programs in industry. Teaching and learning strategies. Needs assessment. Evaluation. (Lec. 3) Pre: PSY 113 and senior standing. Not for graduate credit. Staff
- 431 Advanced Management Seminar (I or II, 3) Integrated approach to problems in major areas of business management with emphasis on administrative and executive viewpoint. (Seminar) Pre: 301. Staff
- 435 Compensation Administration (II, 3) Concepts, models, theories, and legislation related to the employee compensation process. Discussion and skill acquisition in job analysis, job evaluation, wage surveys, and performance appraisal. (Lec. 3) Pre: 303 or permission of instructor. Not for graduate credit. Staff
- 437 Human Resource Planning, Selection, and Placement (1, 3) Recruitment, selection, and placement of human resources. Integration of human resource plans with organizational strategic plans. Career planning and development. Affirmative action and equal opportunity aspects of selection and placement. (Lec. 3) Pre: ECN 301, MGT 303, or permission of instructor. Not for graduate credit. Staff
- 453 International Dimensions of Business (I, 3) Introduction to the international aspects of business, including the cultural, legal, and political environment faced by the multinational

- corporation. (Lec. 3) Pre: senior standing or permission of chairperson. Not for graduate credit.
- 480 Small Business Management (I, 3) Investigation and evaluation of the small business enterprise. Current literature studied to enable the student to understand and appreciate the small business. Required project performed with a small organization. (Lec. 3) Pre: senior standing in the College of Business Administration or permission of instructor. Staff
- 482 Entrepreneurship (II, 3) Procedures for starting and operating one's own business including the following topics: the business idea, personality traits, feasibility analysis, business plan, and functional area basics. Intended for nonbusiness majors. (Lec. 3) Pre: senior or graduate standing and permission of chairperson. Not open to students with credit in REN 325. Comerford
- 491, 492 Special Problems (I and II, 3 each) Lectures, seminars, and instruction in research techniques, literature, and other sources of data in organizational management, industrial relations, and law with application to specific individual projects. (Independent Study) Pre: permission of chairperson. Not for graduate credit. Staff
- 493 Internship in Management (I or II, 3) Approved, supervised work experience with participation in management and problem solving related to management. Fifteen working days (or 120 hours). (Practicum) Pre: junior standing and proposal approved by the College of Business Administration. May be repeated for credit. Not for graduate credit. S/U only. Staff
- 626 Organizational Behavior (1, 3) Incorporates the insights gleaned from the disciplines of psychology, sociology, anthropology, and the social sciences of politics, economics, and history in the study of the behavior of organizations and of their principal actors. (Lec. 3) Pre: 630 or equivalent. Staff
- 627 Advanced Organizational Theory and Behavior (II, 3) Previous knowledge of classical and traditional management thought used to provide concepts, analytical approaches, and skills for understanding how behavioral sciences influence complex organizational systems. (Lec. 3) Pre: 626. Staff
- 630 Organizational Theory and Behavior (I and II, 4) Management applied to business objectives, policies, organizational staffing and control. Interpersonal dynamics in organizational settings. Role of human resource management. Emphasis on individual and structural fac-

- tors affecting decision making. (Lec. 4) Pre: graduate standing. Staff
- 635 Consulting and Management Practice (I or II, 3) Review of the theory and practice of effective consulting and development of consultation skills. (Practicum) Pre: 630 or permission of instructor. Coates
- 638 Seminar in Management (1 or II, 3) Class discussion of typical cases, original research work in the field of management with discussion of data collected and analyzed by individual students. (Seminar) Pre: permission of chairperson. Staff
- 639 Advanced Topics in Management (I or II, 3) Integrated approach to problems in major areas of business management with emphasis on administrative and executive viewpoint. (Seminar) Pre: permission of chairperson. Staff
- 640 Compensation Administration (1 or 11, 3) Compensation and performance appraisal systems. Theory and techniques used to determine job worth. Special issues in compensation management, such as relating pay to performance through appraisal techniques and pay compression. (Lec. 3) Pre: 630. Staff
- 641 Human Resource Development (1 or 11, 3) Techniques used in procurement and development of human resource. Planning through recruitment, selection, and placement to training and development. Integration of HRD process with organizational strategic plans. (Lec. 3) Pre: 630. Staff
- 655 International Business Management (1, 3) Examines the problems and characteristics of international management by focusing on the role of the multinational corporation in a crosscultural setting. (Lec. 3) Pre: 630 or equivalent. Staff
- 656 Japanese Business Systems (I or II, 3) A comparative study of Japanese business management systems by means of readings, case studies, and lectures. Focus on management practices in Japanese firms and problems of coping with environmental factors in Japan and the United States. (Lec. 3) Pre: 630 or permission of instructor. Coates
- 657 International Comparative Management and Culture (1 or 11, 3) An interdisciplinary course which examines the effects of culture on managerial behavior and decision making. (Lec. 3) Pre: 630. Coates
- 670 Business Environmental Analysis (II, 3) Advanced analysis of increasingly complex interrelationships between the business organization

and its environment. Emphasis on conceptual foundations of business and the impact of contemporary sociopolitical issues on management decision making. (Lec. 3) Pre: 630 or permission of chairperson. Staff

- 681 Administrative Policy and Decision Making (I and II, 3) Case studies of management problems and evaluation of alternative solutions by integrating functional areas of business. Discussion of ethical, social, and regulatory environments in domestic and multinational firms. Includes the M.B.A. written comprehensive examination, (Lec. 3) Pre: all M.B.A. 500-level first-tier courses or equivalent and a minimum of 21 M.B.A. credits which must include MGT 630. MKT 601, FIN 601, ACC 610, or permission of instructor. Staff
- 691, 692 Directed Study in Management (/ and II, 1-3 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. Staff
- 693, 694 Internship in Management (I and II, 3 each) Participation in management and/or problem solving under the supervision and quidance of a sponsoring agency with evaluation by the College of Business Administration. (Practicum) Pre: proposal acceptance by the College of Business Administration, no previous internship credit, and graduate standing. S/U credit.
- 695 Managerial Skills Development (I, II, and SS, 3) Assessment, feedback, and development of managerial skills; leadership, group decision making and problem solving, negotiation, making presentations, giving feedback, listening. (Lec. 3) Pre: 630. Staff
- 696 Strategic Decision Making (I, II, and SS, 3) Development of the skills and competencies in strategic thinking; use of critical analysis in the diagnosis of organizational and management problems. Serves as foundation for policy course and case method. (Lec. 3) Pre: graduate standing. deLodzia
- 697 Doctoral Research Seminar (1 and 11, 3) Provides a rigorous analysis of current research questions and research techniques used to address those questions in the academic discipline. Recent developments and current issues addressed. (Seminar) Pre: enrollment in Phase II of the Ph.D. program in business administration. Staff
- 699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or pro-

gram committee. (Independent Study) Pre: enrollment in Phase III of the Ph.D. program in business administration, S/U credit

Management Science and Information Systems (MSI)

Chairperson: Professor Ebrahimpour

- 301 (MGS) Foundations of Computer Technology in Business (I or II, 3) Applied computer techniques used to solve business problems. Computers, various software programs, and case studies will be used to facilitate intelligent and informed decision making. (Lec. 3) Restricted to nonbusiness majors. Staff
- 309 (OMT) Operations Management (I and II, 3) Operations management problems in global and domestic environments. Operations strategy, service, and manufacturing; forecasting; inventory management; production and material requirements planning; scheduling; just-intime; and quality management. (Lec. 3) Pre: BAC 202 and 207 or permission of instructor. Staff
- 310 (MIS 306) Applications of Microcomputer Software in Business (I and II, 3) In-depth study of microcomputer software used in business applications. Emphasis on spreadsheets, data management, presentation graphics, and communication software. Student projects and microcomputer lab assignments required. (Lec. 3) Pre: BAC 207. Staff
- 350 (MGS 364) Managerial Decision Support Systems (I and II, 3) Methodologies and information technologies that support decision making. Emphasis on the use of PC-based analytical software for solving managerial problems; case studies and group problem solving. (Lec. 3) Pre: BAC 202 and 207. Staff
- 410 (MIS 307) Information Technology in Business Organizations (I or II, 3) An overview of existing and developing information technologies used in business organizations. Topics include computer hardware and software, business information systems, operating systems, data communications, and local- and wide-area networks. (Lec. 3) Pre: 310 or permission of instructor. Not for graduate credit for students in the College of Business Administration. Staff
- 420 (MIS 483) Business Applications Programming (1 or 11. 3) Techniques for the development of business software applications using appropriate hardware platforms and software environments. Emphasis on creation and manipulation of data structures used in business systems. (Lec. 3) Pre: 310 or permission of instructor. Staff

- 430 (MIS 484) Management System Analysis and Design (1 or II, 3) Concepts, methods, and tools used in the design, development, operation, and evaluation of computer-based information systems. (Lec. 3) Pre: 310 or permission of instructor. Staff
- 440 (MIS 485) Management of Databases (I or II. 3) Concepts and methods in management of data: creation, design, and implementation; data models; integrity; and security. Use of database management systems software. (Lec. 3) Pre: 310 or permission of instructor. Staff
- 450 (MGS) Forecasting (I or II, 3) Forecasting for advanced students in all areas of business administration. Introduction to time series analysis including decomposition of the multiplicative model, exponential smoothing, and ARIMA processes. A variety of software systems are employed, with special emphasis on microcomputer systems. (Lec. 3) Pre: BAC 202 and 207 or permission of instructor. Staff
- 455 (MGS 370) Analysis of Managerial Data (I or II, 3) Theory and application of selected statistical methods, including linear models, sampling, and analysis of surveys. Emphasis will be placed on the extraction of information from large data sets and the utilization of statistical information in the decision-making process. (Lec. 3) Pre: BAC 202 and 207 or permission of instructor. Not for graduate credit for students in the College of Business Administration. Staff
- 460 (OMT) Management of Quality Control and Improvement (I or II, 3) Principles of quality management including control charts, process management, and other techniques, with emphasis on the effect of these principles on decision making in various organizations. (Lec. 3) Pre: BAC 202 and 207 or permission of instructor. Staff
- 465 (OMT 458) Advanced Operations Management (I or II, 3) Advanced topics in operations management such as demand management; multi-item, multi-location inventories; capacity planning and control; theory of constraints; and time-based competition in manufacturing and service operations. (Lec. 3) Pre: 309 or permission of instructor. Staff
- 470 (MGS) Advanced Managerial Decision Support Systems (I or II, 3) Development and presentation of decision support, executive information, and expert systems. Emphasis on the collaborative solution and the presentation of cases. (Lec. 3) Pre: 350. Staff
- 480 (MGS 445) Managerial Application of Simulation (I or II, 3) Evaluation and design of

computer simulation models for operational and strategic decision making. (Lec. 3) Pre: BAC 202 and 207 or permission of instructor. Staff

491, 492 (MGS) Special Problems (I and II, 1-3 each) Lectures, seminars, and instruction in operations research techniques, with emphasis on student research projects. (Independent Study) Pre: permission of instructor. Staff

493 (MGS) Internship in Management Science and Information Systems (1 or 11, 3) Approved supervised work experience with participation in management and problem solving related to management science and information systems. Fifteen working days (or 120 hours). (Practicum) Pre: junior standing and proposal approved by the College of Business Administration. May be repeated for credit. Not for graduate credit in management science and information systems. S/U only. Staff

495 (MGS) Seminar in Management Science and Information Systems (I or II, 3) Preparation and presentation of papers on selected topics. (Seminar) Pre: 350. Not for graduate credit in management science and information systems. Staff

600 (MIS) Managing with Information Resources (I and II, 2) Concepts of information technologies and systems as they relate to the information-age organization. Major focus is on how the various information resources can be managed to facilitate organizational effectiveness. Topics include information and communication technologies, decision support and information systems, technology-enabled process re-engineering, and information architecture. (Lec. 2) Pre: BAC 500 or permission of instructor. Staff

601 (MGS) Business Research Methods: Linear Models (1, 3) Theory and application of regression and correlation analysis, analysis of variance, and experimental design. (Lec. 3) Pre: BAC 500, 520, 530 or permission of instructor. Staff

602 (MGS) Business Research Methods: Multivariate Analysis (II, 3) Introduction to multivariate analysis with emphasis on business applications. Topics include factor analysis, cluster analysis, discriminate functions, and multivariate analysis of variance. (Lec. 3) Pre: 601 or permission of instructor. Staff

605 (MIS) Business Microcomputer Applications (1, 3) Microcomputer technology and applications in business. Hardware, software, selection of microcomputer systems, and use of commercial software packages. Student projects and microcomputer laboratory sessions required. (Lec. 3) Pre: BAC 500. Staff

620 (MGS) Quantitative Methods for Management (I and II, 2-3) Survey of principal operations research/management science models. Linear programming, network, and other mathematical programming models; simulation, decision analysis, and other probabilistic models. (Lec. 2-3) Pre: BAC 500, 520, and 530 or waiver examinations. Staff

630 (MGS) Management Statistics with SAS and Personal Computer Software (II, 3) Second course in statistical analysis for M.B.A. students. Introduces SAS computer languages and personal software. Regression, business experimental designs, time series, business index numbers, and decision theory. (Lec. 3) Pre: BAC 500, 520, and 530 or waiver examinations. Staff

640 (OMT) Operations Management (I and II, 2) The management of manufacturing and service operations. Topics include flow processes, inventories, scheduling, capacity, and operations strategy. (Lec. 2) Pre: BAC 500, 520, 530. Staff

664 (MIS) Health Information Systems (I or II, 3) Concepts associated with the design, implementation, management, and evaluation of administrative and clinical health information systems. (Lec. 3) Pre: BAC 500 or equivalent or permission of instructor. Staff

675 (MGS) Applied Time Series Methods and Business Forecasting (I and II, 3) Study of time series methods. Construction and use of autoregressive integrated moving averages (ARIMA) forecasting models. Applications to strategic decision actions. (Lec. 3) Pre: 601. Staff

684 (MGS) Advanced Mathematical Programming Methods in Management (II, 3) Introduction to integer, nonlinear, and dynamic programming. Emphasis on application of modern mathematical optimization techniques in singlestage and multiple-stage management decision problems. (Lec. 3) Pre: 620 or permission of instructor. Staff

691, 692 (MGS) Directed Study in Management Science and Information Systems (I and II, 1-3 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. Staff

693, 694 (MGS) Internship in Management Science and Information Systems (I and II, 3 each) Participation in management and/or problem solving under the supervision and quidance of a sponsoring agency with evaluation by the

College of Business Administration. (Independent Study) Pre: proposal approved by the College of Business Administration, no previous internship credit, and graduate standing. S/U credit. Staff

695 (MGS) Seminar in Management Science and Information Systems (I or II, 3) Preparation and presentation of papers on selected topics in management science and information systems. (Seminar) Pre: 620. Staff

697 (MGS) Doctoral Research Seminar (I and II, 3) Provides a rigorous analysis of current research questions and the research techniques used to address those questions in the academic discipline. Recent developments and current issues addressed. (Seminar) Pre: enrollment in Phase II of the Ph.D. program in business administration. Staff

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: enrollment in Phase III of the Ph.D. program in business administration. S/U credit.

Marine Affairs (MAF)

Chairperson: Professor Juda

100 Human Use and Control of the Marine Environment (1, 3) Introduction to human activities occurring in the marine environment and adjacent land areas. Discussion of manine geography and natural marine processes necessary to understand the controls on human activities. (Lec. 3) Juda

120 Maritime New England (I or II, 3) Multidisciplinary analysis of coastal issues in southern New England states. Emphasis on the utilization, impacts, and management of the shore environment from colonial to modern times. (Lec. 3) Krausse

220 Introduction to Marine and Coastal Law (II, 3) Basic principles of marine and coastal law in the United States. An integration of coastal zone, outer continental shelf, fisheries, marine pollution, and admiralty laws. (Lec. 3) Nixon

221 Introductory Cartography (I and II, 3) Principles and methods of map design and construction for geographic analysis. Emphasis on compilation, generalization, scaling, and symbolizing quantitative and qualitative data. (Lec. 1, Lab. 2) Krausse

312 The Politics of the Ocean (I or II, 3) Survey of decision making with respect to the marine environment at the international, national, and

- local levels. Special emphasis on laws and treaties of the United States and the United Nations. (Lec. 3) Pre: 100. Staff
- 315 Marine Pollution Policy (I or II, 3) An analysis of actual and potential governmental management techniques for pollution reduction and control in ocean and coastal regions. Emphasis on practices in the United States. (Lec. 3) Pre: 100. Burroughs
- 320 Shipping and Ports (I or II, 3) An introduction to waterborne movement of cargo. An examination of shipping and port operations, innovations in maritime transportation systems, and the interplay of the operators, shipping, and ports. (Lec. 3) Pre: 100. Marti
- 330 World Fishing (II, 3) The role of marine fisheries and aquaculture in world food production. Social, economic, legal, and scientific issues in fisheries management. (Lec. 3) Pre: 100. Nixon
- 410 Problems in Marine Affairs (I and II, 3) Advanced work in the management of the marine environment, with special emphasis on case studies and student projects. (Seminar) Required for seniors in marine affairs. Not for graduate credit in marine affairs. Gordon
- 413 Peoples of the Sea See Anthropology 413.
- 434 Introduction to Environmental Law See Community Planning 434.
- 456 Polar Resources and Policy (1, 3) Description of Arctic and Antarctic natural resources and examination of current issues associated with their development. Analysis of alternative management regimes with reference to treaties and continuing international negotiations. (Lec. 3) Pre: permission of instructor. Burroughs
- 461 Coastal Zone Uses (1 or II, 3) Activities in the coastal zones of both developed and developing countries, and the impacts of these activities on the environment. Techniques of accommodating conflicting uses. (Lec. 3) Pre: junior or senior standing. West
- 465 GIS Applications in Coastal and Marine Management (II, 3) The use of geographical information systems (GIS) technology in coastal and marine settings. Database acquisition and management are emphasized. Case application in coastal zone management, artificial habitat, and fisheries management. (Lec. 3) Pre: 221 or permission of instructor. Gordon
- 471 Island Systems (I or II, 3) Human impact on the use, alteration, and control of island ecosystems. Emphasis on sociopolitical and techno-

- logical developments as they effect changes in the oceanic and coastal island environment. (Lec. 3) In alternate years. Krausse
- 472 Marine Recreation Management (II, 3) Analysis of supply and demand of marinerelated recreational activities in an urban and exurban context. Analysis of qualitative and quantitative characteristics of user behavior, socioeconomic and environmental impact. (Lec. 3) West or Gordon
- 482 Quantitative Methods in Marine Affairs (II, 3) Introduction to descriptive and inferential statistics in geography and marine affairs. Emphasis on the spatial application of statistical tests with particular utility to the geographer and marine affairs student. (Lec. 3) Pre: STA 220 or equivalent for undergraduate students. West
- 484 Environmental Analysis and Policy in Coastal Management (1, 3) Analysis of environmental policy strategies as applied in federal and state coastal management programs. Emphasis on coastal environmental assessment and program evaluation techniques, hazards management, regulatory frameworks, and environmental ethics. (Lec. 3) Pre: 461 or permission of instructor, Gordon
- 490 Field Experience in Marine Affairs (I and II, 3-6) Supervised undergraduate internship within an approved work setting designed to provide students with on-the-job experience relevant to their academic training and career goals. Students are responsible for securing internship positions and learning contract. (Practicum) Pre: junior standing and permission of instructor. Not for graduate credit. Staff
- 491, 492 Special Problems (I and II, 3 each) Individual guidance in major readings and methods of research. (Independent Study) Pre: permission of chairperson. Staff
- 499 Directed Study (I and II, 1-3) Individual research and reports on problems of special interest, including honors thesis research. (Independent Study) Pre: permission of instructor. Staff
- 502 Research Methods in Marine Affairs (II, 3) Emphasis on the application of alternative research methods utilized in a typical interdisciplinary study. Development of specific research projects. (Lec. 3) Pre: 482 or permission of chairperson. Marti
- 511 Ocean Uses and Marine Science (1, 3) Introduction to selected ocean uses focusing on the interplay of public policy and marine science. Emphasis on policy implications of uses such as resource and energy extraction and waste disposal. (Lec. 3) Burroughs

- 512 (or PSC 512) Marine Science and Policy Analysis (II, 3) The role of ocean science in initiation, forecasting, implementation, and evaluation of public policy is examined through waste disposal, protected areas, and oil development, among other topics. (Seminar) Pre: 511 or permission of instructor. Burroughs
- 516 (or CPL 516) Seminar on the Urban Waterfront (II, 3) The urban environment, its evolution, structure, and function as it relates to the waterfront. Topics on policy, management, and utilization on the local and regional levels will be covered. Field trip and student project required. (Seminar) Pre: credit or concurrent enrollment in marine affairs or community planning or permission of instructor. Krausse
- 520 Seminar in Coastal Margin Management (II, 3) Nature of oil, gas, and other mineral resources on the outer continental shelf, public and private sector decisions, and environmental issues are reviewed. Emphasis on the utility of data for policy development. (Seminar) Burroughs
- 521 Coastal Zone Law (1, 3) Examination of the authority of different levels and agencies of government to make decisions affecting coastal regions. Survey of existing and proposed state and national legislation affecting coastal regions. (Lec. 3) Nixon
- 523 Fisheries Law and Management (II, 3) Examination of the relationship between law and fisheries policy on the international and national levels, law relating to fisheries, jurisdictional levels, function of law in implementing fisheries management policy. (Lec. 3) Nixon
- 526 LANDSAT Remote Sensing and Analysis (II, 3) Theory and application of the LANDSAT remote-sensing system and geographical information systems emphasizing coastal resource surveillance. Development and interpretation of supervised and unsupervised classifications from digitized reflectance values obtained from the MS and TM scanners. (Lec. 3) Pre: 482 or permission of instructor. Staff
- 530 Coastal Area Management Seminar (1, 3) Examines coastal resource problems from a spatial approach, emphasizing present and potential user conflicts and the manner in which they have been addressed here and abroad. (Seminar) Pre: credit or concurrent enrollment in MAF, CPL, or REN, graduate standing, or permission of instructor, West
- 562 Admiralty Law (I, 3) Fundamentals of admiralty law: collisions at sea, bills of lading, marine insurance, and rights of seamen. Case stud-

ies of marine transportation problems and their resolution by law. (Lec. 3) Nixon

563 Maritime Transportation (1, 3) Passenger and commodity transportation. Analysis of the relationship between transportation services and the spatial distribution of activities. Emphasis on multimodel transport and bulk commodities. (Lec. 3) Pre: senior or graduate standing or permission of instructor. Marti

564 Port Operations and Policy (II, 3) Analysis of coastal and international trade routes and the response of ports. Special emphasis on the container revolution, liquid natural gas transportation, and deep-water ports for supertankers. (Lec. 3) Marti

565 Cruise Ship Operations, Marketing, and Ports (1, 3) Explores the many facets of the cruise ship industry from the points of view of social, management, and policy science. Designed to familiarize the student, utilizing an interdisciplinary approach, with the genesis, current status, and future roles of this dynamic industry. (Seminar) Pre: graduate standing, or seniors with permission of instructor. Marti

571 Marine Geography (*I*, *3*) The marine region as a unique complex of physical and cultural elements. The purpose is to analyze functional relationships within the region and to assess forms of regional organization and control. (*Lec. 3*) Staff

577 (or PSC 577) International Ocean Law (*l*, 3) Principles of international law as they relate to ocean management problems. Jurisdiction in the territorial sea, contiguous zones, and the deep seabed will be examined within the international legal framework. (*Lec. 3*) *Pre: 312, CPL 434*, or *permission of instructor*. Juda

578 International Ocean Organizations (II, 3) International organizations involved in marine-related activities, including their planning, management, and regulatory and assistance functions. Attention to the impact of these organizations on national policies in the developed and developing worlds. (Lec. 3) Pre: 577 or permission of instructor. Juda

582 Estuarine Policy (*I*, *3*) Policy options, governing structures, and management techniques for estuarine areas are considered with special attention to the effectiveness of the resulting approaches. (*Lec. 3*) Burroughs

586 Environmental Impact Assessment and Analysis (1, 2) Centers on an impact assessment of a proposed coastal community project and includes the development of project alterna-

tives, associated impacts, preparation of a public hearing, and final report. Relevant methods and procedures are reviewed. (Practicum) Pre: matriculated graduate status or permission of instructor. 586 may not be used for program credit unless 587 is completed in the same academic year. West

587 Environmental Assessment Meeting and Report (II, 2) Continuation of 586, which must be taken in the same academic year. Focus is on the public meeting and the completion of written report prepared in 586. (Practicum) Pre: 586. West

589 Master's Project Research (I or II, 3) Preparation of a major research paper for M.M.A. students under the guidance of a graduate faculty member. (Independent Study) Pre: graduate standing in the M.M.A. program. S/U credit. Staff

591, 592 Directed Study or Research (I and II, 3 each) Areas of special research interest of graduate students. (Independent Study) Pre: permission of chairperson. Staff

595 Problems of Modernization in Developing Nations

See Resource Economics 595.

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit. Staff

602 Federal Ocean Policy and Organization (II, 3) Ocean policy development and implementation by the executive and legislative branches of government. Allocation of powers and analysis of the decision-making process for the oceans. (Lec. 3) Juda

651, 652 Marine Affairs Seminar (I and II, 3 each) Interdisciplinary seminar conducted by marine affairs program faculty supplemented by guest speakers from industry and government. Focuses on problems of marine resources development and management at the local, state, national, and international policy levels. (Seminar) Burroughs, Gordon, Juda, Krausse, Marti, Nixon, and West

Marine and Environmental Topics

Animal and Veterinary Science (AVS) 101 Introduction to Animal Science 323, 324 Animal Management I, II

Anthropology (APG) 413 (or MAF) Peoples of the Sea

Aquacultural Science and Pathology (ASP)

281 Introduction to Aquaculture

381 Shellfish Aquaculture

400 Diseases of Cultured Fishes

401 Pathobiology

476 The Genetics of Fish

481 Shellfish Aquaculture Laboratory

483 Salmonid Aquaculture

486 Applied Physiology of Fish

491, 492 Special Problems

501, 502 Seminar

555, 556 Pathology Rotation

581 Current Topics in Molluscan Aquaculture

584 Advanced Aquaculture Systems

586 Fish Nutrition

Biology (BIO)

101 Biology of Plants

102 General Animal Biology

Botany (BOT)

111 General Botany

418 Marine Botany

465 Phycology: An Introduction to the Algae

Chemical Engineering (CHE)

212 Chemical Process Calculation

403, 404 Introduction to Ocean Engineering Processes I, II

534 (or OCE) Corrosion and Corrosion Control

535 (or OCE) Advanced Course in Corrosion

548 (or FSN) Separations for Biotechnology

Civil and Environmental Engineering (CVE)

374 Environmental Engineering

470 Water and Wastewater Transport Systems I

471 Water and Wastewater Treatment Systems

474 Water Quality Sampling and Analysis

475 Water in the Environment

478 Hazardous Waste Disposal and Solid Waste Management

570 Sanitary Chemistry

571 Sanitary Chemistry Laboratory

572 Biosystems in Sanitary Engineering

573 Theory of Water Purification and Treatment

581 (or OCE) Experimental Geomechanics

583 (or OCE) Advanced Foundation Engineering

588 Groundwater Hydrology

672 Water Pollution Control and Treatment of Wastewater

677 Stream and Estuarine Analysis

681, 682 Advanced Geotechnical Engineering I,

Community Planning (CPL)

434 (or MAF) Introduction to Environmental Law

- 511 Planning and Natural Environmental Systems
- 545 Land Development Seminar
- 549 Seminar in Ecological Planning

Electrical Engineering (ELE)

677 (or OCE) Statistical Sonar Signal Processing

Entomology (ENT)

- 381 (or ZOO) Introductory Entomology
- 386 (or ZOO 382) Introductory Entomology Laboratory
- 529 Systems Science for Ecologists
- 555 Insect Pest Management
- 561 Aquatic Entomology

Fisheries Science and Technology (FST)

- 315 Living Aquatic Resources
- 321 World Fishing Methods
- 341 Marine Propulsion Systems
- 342 Marine Auxiliary Systems
- 343 Vessel Repair and Maintenance
- 415 Fishery Science
- 421 Design of Fish Capture Systems
- 510 Applied Problems in Marine Fisheries Ecology
- 516 Early Life History of Aquatic Resource Animals
- 521 Evaluation of Fish Capture Systems

Food Science and Nutrition (FSN)

- 434 Marine Food Processing
- 532 Seafood Quality

Geology (GEL)

- 100 Environmental Geology
- 103 Physical Geology
- 210 Geomorphology
- 277 Coastal Geologic Environments
- 301 Geology of Mineral Resources
- 401 Ore Deposits
- 450 Introduction to Sedimentation and Stratigraphy
- 483 Hydrogeology
- 568 Isotopes in Hydrogeology
- 577 Coastal Geologic Hazards
- 581 Topics in Tectonic Geology

Marine Affairs (MAF)

- 100 Human Use and Control of the Marine Environment
- 120 Maritime New England
- 220 Introduction to Marine and Coastal Law
- 221 Introductory Cartography
- 312 The Politics of the Ocean
- 315 Marine Pollution Policy
- 320 Shipping and Ports
- 330 World Fishing
- 410 Problems in Marine Affairs
- 456 Polar Resources and Policy
- 461 Coastal Zone Uses

- 465 GIS Applications in Coastal and Marine Management
- 471 Island Systems
- 472 Marine Recreation Management
- 482 Quantitative Methods in Marine Affairs
- 484 Environmental Analysis and Policy in Coastal Management
- 490 Field Experience in Marine Affairs
- 502 Research Methods in Marine Affairs
- 511 Ocean Uses and Marine Science
- 512 (or PSC) Marine Science and Policy Analysis
- 516 (or CPL) Seminar on the Urban Waterfront
- 520 Seminar in Coastal Margin Management
- 521 Coastal Zone Law
- 523 Fisheries Law and Management
- 530 Coastal Area Management Seminar
- 562 Admiralty Law
- 563 Maritime Transportation
- 564 Port Operations and Policy
- 565 Cruise Ship Operations, Marketing, and Ports
- 577 (or PSC) International Ocean Law
- 578 International Ocean Organizations
- 582 Estuarine Policy
- 586 Environmental Impact Assessment and Analysis
- 587 Environmental Assessment Meeting and
- 602 Federal Ocean Policy and Organization
- 651, 652 Marine Affairs Seminar

Marine Resource Development (MRD)

- 200 Introduction to Marine Resource Development
- 270 Basic Scuba Diving in Science and Technology
- 290 Small Boats: Their Equipment and Operation
- 390 Vessel Operations
- 433 Research Diving Methods
- 481, 482 Applied Problems in Marine Resource Development I, II

Mechanical Engineering and Applied Mechanics (MCE)

- 354 Fluid Mechanics
- 434 Thermal Environmental Engineering
- 551 Fluid Mechanics I
- 652 Experimental Methods in Fluid Mechanics
- 653 Fluid Mechanics II
- 654 Fluid Mechanics III

Microbiology (MIC)

- 211 Introductory Microbiology
- 523 (or FSN or NRS) Water Pollution Microbiology
- 525 (or FSN) Water Pollution Microbiology Laboratory

Natural Resources Science (NRS)

- 100 Natural Resource Conservation
- 212 Introduction to Soil Science
- 286 Analysis and Presentation of Environmental Data
- 300 Seminar in Natural Resources
- 301 Introduction to Forest Science
- 302 Fundamentals of Forest Management
- 304 Field Ornithology
- 305 Principles of Wildlife Management
- 351 Soil Morphology Practicum
- 399 Natural Resources Internship
- 406 Wetland Wildlife
- 410 Fundamentals of GIS
- 412 Soil-Water Chemistry
- 423 Wetland Ecology
- 424 Wetlands and Land Use
- 450 Soil Conservation and Land Use
- 451 Soil and Water Conservation Technology
- 461 Hydrology and Water Management
- 500 Graduate Seminar in Natural Resources
- 505 Biology and Management of Migratory
- 510 Soil-Water Relations
- 514 Fate of Organic Chemicals in Soils and
- 522 Advanced GIS Analysis of Environmental Data
- 526 Microbial Ecology of Soils and Sediments
- 532 Conservation Biology
- 534 Ecology of Fragmented Landscapes
- 555 Applied Coastal Ecology
- 567 Soil Genesis and Classification
- 568 Recent Advances in Natural Resources Science
- 582 Seminar in Soil Ecology and Biochemistry

Ocean Engineering (OCE)

- 101 Introduction to Ocean Engineering
- 215 Ocean Engineering Seminar I
- 307 Introduction to Engineering Wave Mechanics and Littoral Processes
- 410 Basic Ocean Measurements
- 411 Basic Coastal Measurements
- 416 Ocean Engineering Seminar II
- 421 Marine Structure Design
- 471 Underwater Acoustics and Data Analysis
- 495 Ocean Systems Design Project
- 510 Engineering Ocean Mechanics
- 514 Engineering Wave Mechanics and Nearshore Processes
- 522 Dynamics of Waves and Structures
- 560 Introduction to Data Collection Systems
- 561 Introduction to the Analysis of Oceanographic Data
- 565 Ocean Laboratory I
- 571 (or ELE) Underwater Acoustics I
- 582 (or CVE) Seabed Geotechnics
- 605, 606 Ocean Engineering Seminar

- 611 Coastal and Estuarine Environmental Modeling
- 614 Coastal Modeling
- 623 Random Waves and Vibrations
- 672 (or ELE) Únderwater Acoustics II
- 673 Advanced Course in Underwater Acoustic Propagation
- 676 Acoustic Radiation from Underwater **Vibrators**
- 688 (or CVE) Marine Geomechanics

Oceanography (OCG)

- 123 Oceans, Atmospheres, and Global Change
- 401 General Oceanography
- 491 Ocean Studies
- 501 Physical Oceanography
- 505 Marine Analytical Chemistry
- 510 Descriptive Physical Oceanography
- 521 Chemical Oceanography
- 523 Organic Geochemistry of Natural Waters
- 524 Chemistry of the Marine Atmosphere
- 531 Synoptic and Dynamic Meteorology
- 540 Geological Oceanography
- 561 Biological Oceanography
- 574 Biology of Marine Mammals
- 576 (or MIC) Marine Microbiology
- 605 Dynamical Oceanography
- 606 Aquatic Community Ecology
- 610, 611 Geophysical Fluid Dynamics I, II
- 613 Waves
- 614 Tides
- 620 Chemical Distributions
- 623 Physical Chemistry of Seawater
- 625 Organic Geochemistry of Sediments
- 628 High-Temperature Geochemistry
- 631 Seminar in Marine and Atmospheric Chemistry
- 643 Subduction Zones
- 644 Global Paleoclimatology
- 645 Petrology of the Oceanic Crust
- 646 Deep-Sea Sediments and Processes
- 649 Plankton Paleoecology
- 651 Marine Stratigraphy
- 652 Marine Geophysics
- 661 (or BOT) Phytoplankton Taxonomy
- 663 (or BOT) Phytoplankton Physiology
- 664 (or BOT) Phytoplankton Ecology
- 665 Marine Bio-Optics and Remote Sensing
- 666 Zooplankton
- 667 (or BOT) Advanced Phytoplankton
- 668 Productivity of Ocean Margins
- 669 Marine Fish Ecology and Production
- 670 Fish Population Dynamics
- 671 Marine Zooplankton Ecology
- 678 Low-Temperature Geochemistry and Isotope Geology
- 679 (or ZOO) Animal Communication
- 681 Marine Pollution

- 689 Coastal Marine Ecosystems
- 695 Seminar in Oceanography

Physical Education (PED)

- 346 Skin and Scuba Diving, Beginners
- 347 Skin and Scuba Diving, Advanced

Physics (PHY)

- 130 Physics and Climatic Change
- 483, 484 (or AST) Laboratory and Research **Problems in Physics**

Plant Sciences (PLS)

- 401, 402 Plant Sciences Seminar
- 405 Propagation of Plant Materials
- 436 Floriculture and Greenhouse Crop Production
- 440 Diseases of Turfgrasses, Trees, Shrubs, and Ornamental Shrubs
- 441 Plant Disease Laboratory
- 442 Professional Turfgrass Management
- 461 Weed Science
- 463 Principles of Plant Disease Control
- 471, 472 Plant Improvement I, II
- 475 (or NRS) Plant Nutrition and Soil Fertility
- 476 Environmental Plant Physiology
- 501, 502 Graduate Seminar in Plant Sciences
- 511 The Nature of Plant Disease
- 512 Plant Growth and Development
- 572 (or BCH) Plant Biochemistry

Political Science (PSC)

402 Environmental Policy and Politics

Resource Economics (REN)

- 341 Economics of Food and Natural Resource Markets
- 432 Environmental Economics and Policy
- 435 Aquacultural Economics
- 514 Economics of Marine Resources
- 522 Mathematical Programming for Natural Resource Management
- 534 Economics of Natural Resources
- 540 Applied Resource Economics
- 543 Economic Structure of the Fishing Industry
- 595 (or MAF or PSC or SOC) Problems of Modernization in Developing Nations
- 602 Research Methodology
- 610 Advanced Studies
- 630 Resource Analysis
- 634 Economics of Resource Development
- 635 Marine Resources Policy
- 677 Econometric Applications in Resource **Economics**

Statistics (STA)

550 Ecological Statistics

Zoology (ZOO)

- 101 Animal Diversity
- 104 Population and Community Dynamics
- 111 General Zoology

- 141 Introduction to the Biology of Marine **Animals**
- 262 (or BOT) Introductory Ecology
- 286 Humans, Insects, and Disease
- 355 Marine Invertebrates of Southern New
- 441 Environmental Physiology of Animals
- 442 Mammalian Physiology
- 445 Endocrinology I
- 454 Invertebrate Zoology
- 455 (or BOT) Marine Ecology
- 457 (or BOT) Marine Ecology Laboratory
- 465 Limnology
- 466 Vertebrate Biology
- 467 Animal Behavior
- 501 Systematic Zoology
- 541 Comparative Physiology of Marine Animals
- 545 Endocrinology II
- 561 Behavioral Ecology
- 562 Seminar in Behavioral Ecology
- 563 Ichthyology
- 566 Herpetology
- 567 Natural Selection
- 568 Ornithology
- 570 Field Biology of Fishes
- 664 Seminar in Ichthyology
- 666 Biology of Metamorphosis 668 Biology of Reproduction in Animals
- 675 Advanced Ecology Seminars

Marine Resource Development (MRD)

Chairperson: Professor Nippo (Fisheries, Animal and Veterinary Science)

200 Introduction to Marine Resource Development (I and II, 3) introduction to the estuarine, coastal, and marine environments and the science and technology involved in the use and preservation of these environments. (Lec. 2, Lab. 3) DeAlteris, Castro, or Recksiek

270 Basic Scuba Diving in Science and Technology (1, 3) Rigorous introduction to scuba diving including equipment, diving physics, nodecompression and decompression diving, basic skills, and safety. Emphasis on development of basic knowledge and skills appropriate for a diving scientist or technician. Open Water Diver Certification by the National Association of Underwater Instructors is provided. (Lec. 2, Lab. 3) Pre: scuba diving physical examination and demonstration of strong swimming skills. DeAlteris

290 Small Boats: Their Equipment and Operation (1, '3) Principles and practices of vessel operation, from outboard skiffs to small trawlers. Basic nomenclature, navigation, and shiphandling. Rigging and working gear used in marine resource development. (Lec. 2, Lab. 3) Wing

- 380 Inshore and Coastal Navigation (1, 3) Theory and practice of navigation for operators of vessels working up to 100 miles offshore. Chart work, tides, currents, instruments, visual and electronic aids, graphical and mathematical dead reckoning. (Lec. 2, Lab. 3) DeAlteris
- 381 Mid-Ocean Navigation (I or II, 3) Theory and practice of celestial navigation. Solution of the navigational spherical triangle. Compass calibration by celestial observation. Great circle sailing. The day's work of the professional ocean navigator. (Lec. 3) Pre: 380. Staff
- 390 Vessel Operations (I, 3) Vessel operations in commercial applications including commercial fishing, dive boat, and recreational fishing. Preparation for U.S. Coast Guard license examination. (Lec. 2, Lab. 3) Pre: 290 or permission of instructor. Wing
- 433 Research Diving Methods (1, 3) Underwater methods used to assess biological, physical, chemical, and geological characteristics of estuarine and coastal environments are presented and used to investigate seasonal changes in these parameters in the Narragansett Bay environment. (Lec. 2, Lab. 3) Pre: scuba certification and permission of instructor. DeAlteris and Castro
- 481 Applied Problems in Marine Resource Development I (1, 3) The application of field, laboratory, and analysis methods to the investigation of ecological problems in the estuarine, coastal, and marine environments. The emphasis is on the development of techniques used to study and interpret biological, chemical, geological, and physical processes. (Lec. 2, Lab. 3) Pre: 200, STA 308, or permission of instructor. DeAlteris or Castro
- 482 Applied Problems in Marine Resource **Development II** (II, 3) The application of field, laboratory, and analysis methods to the investigation of ecological problems in the estuarine, coastal, and marine environments. The emphasis is on the integration of the methods into multidisciplinary investigations of specific problems in selected habitats of Narragansett Bay and Rhode Island Sound. (Lec. 1, Lab. 5) Pre: 481. DeAlteris or Castro
- 491, 492 Special Problems and Independent Study (I and II, 1-3 each) Special work to meet individual needs of students in marine resource development. (Independent Study) DeAlteris, Recksiek, or Wing

Marketing (MKT)

Chairperson: Professor Della Bitta

- 301 Marketing Principles (I and II, 3) An introduction to marketing from a managerial viewpoint. Examines social, economic, technological, legal, ethical, and other environmental factors and their impact on product, price, promotion, and distribution decisions in a worldwide market. (Lec. 3) Proficiency test available if course was taken at a non-AACSB program prior to transfer to the University. Staff
- 311 Consumer Behavior (I and II, 3) A review of the decision-making process and factors that influence consumers, including ethical issues. Implications for cross-cultural marketing are examined. (Lec. 3) Pre: 301. Staff
- 321 Social Issues in Marketing (II, 3) Functioning of the market in an affluent society. Effect of marketing decisions by firms placed in the perspective of the collective interest of all participants in society. (Lec. 3) Pre: 301 or permission of
- 331 Fundamentals of Advertising (II, 3) Condensed but comprehensive introduction to advertising. Basic for advanced study of specific phases of advertising. (Lec. 3) Pre: 301 or permission of instructor. Staff
- 341 Professional Selling (1, 3) Fundamentals of the selling process with emphasis or sales theory, selling techniques, ethics of selling, and the salesperson's role in the marketing process. (Lec. 3) Pre: 301 or permission of instructor. Staff
- 405 Marketing Communications (1, 3) The "communications mix" is explored in terms of a total promotional program. Characteristics of advertising media, sales promotion, public relations, and publicity are surveyed. (Lec. 3) Pre: 301 or permission of instructor. Not for M.B.A. graduate credit. Staff
- 406 Product Management (1, 3) Development of product policies and strategies in a competitive environment. Emphasis on organization of the product management function, planning and developing new products, adjusting product strategies, and deleting products. (Lec. 3) Pre: 301 or permission of instructor. Not for M.B.A. graduate credit. Staff
- 407 Channels of Distribution (II, 3) Functions of distribution channels in society with emphasis on forces which shape their configuration and efficiency. Study of channel management with focus on channel development, control, policy, and practice. (Lec. 3) Pre: 301 or permission of instructor. Not for M.B.A. graduate credit. Staff

- 408 Pricing Decisions (II, 3) Analysis of pricing problems and environmental factors influencing pricing decisions. Emphasis on behavioral dimensions of demand and the effects of cost, competition, product characteristics, and the firm's objectives. (Lec. 3) Pre: 301 or permission of instructor. Not for M.B.A. graduate credit. Staff
- 409 Marketing Policy and Problems (II, 3) Summary course, with emphasis on decision making in all marketing areas and on use of the case method. (Seminar) Pre: 311, 415, and senior standing. Not for graduate credit. Staff
- 415 Marketing Research (I and II, 3) Describes the nature and scope of marketing research activities. Reviews research designs, sampling, measurement, analysis, and other issues with focus on providing marketing information to management. (Lec. 3) Pre: BAC 202 or equivalent, MKT 301. Not for M.B.A. graduate credit.
- 434 Advertising Strategy and Management (II, 3) Analysis and development of advertising strategies and campaigns. Uses skills from advertising, consumer behavior, marketing research, and other marketing courses. (Lec. 3) Pre: 331, 415, or permission of instructor. Not for M.B.A. graduate credit. Staff
- 442 Sales Management (II, 3) Planning, organization, and control of sales operations. Emphasis on the sales manager's functions, problems, and responsibilities. (Lec. 3) Pre: 301, 341, or permission of instructor. Not for M.B.A. graduate credit. Staff
- 445 Direct Marketing (I and II, 3) An introduction to direct marketing strategy and techniques. Topics include databases, electronic media, direct mail, catalogs, direct response advertising, telemarketing, and the role of direct marketing in the marketing mix. (Lec. 3) Pre: 301. Not for M.B.A. graduate credit. Staff
- 451 International Marketing (II, 3) Planning and organizing for international marketing operations from a commercial point of view. Differences in market arrangements; legal, cultural, and economic factors in various countries. Strategy of product pricing promotion, channels. (Lec. 3) Pre: 301. Not for M.B.A. graduate credit. Staff
- 491, 492 Directed Study (I and II, 1-3 each) Independent study supervised by department faculty. Seminar meetings concerned with specific marketing topics. (Independent Study) Pre: permission of chairperson. Not for graduate credit.

- 493 Internship in Marketing (I or II, 3) Approved, supervised work experience with participation in management and problem solving related to marketing. Fifteen working days (or 120 hours). (Practicum) Pre: junior standing and proposal approved by the College of Business Administration. May be repeated for credit. Not for graduate credit in marketing. S/U only. Staff
- 601 Managerial Marketing (I, 4) Analysis of marketing problems and determination of marketing policies in product development, promotion, pricing, channel selection; legal aspects. (Lec. 4) Pre: ECN 590, BAC 520 and 530, or equivalent, or permission of instructor. Staff
- 611 Buyer Behavior (I or II, 3) Analysis of major factors influencing the behavior and demand of consumers. Emphasis on using these factors to identify and segment target markets and to assess the effects of these factors on markets. (Lec. 3) Pre: 601 or permission of instructor. Staff
- 615 Marketing Research (1 or 11, 3) Marketing information needs and appropriate means of providing the requisite information are analyzed. Several major marketing decision areas and their research implications are examined in depth. (Lec. 3) Pre: 601, BAC 520 and 530, ECN 590, or permission of instructor. Staff
- 631 Advertising Management (I or II, 3) A course oriented toward managers responsible for planning, appraising, and administering advertising and promotion activities. (Lec. 3) Pre: 601 or permission of instructor. Staff
- 651 International Marketing Management (I and II, 3) Marketing policy making for the multinational firm; organizing for international marketing; its opportunities, pricing, channels, promotion, and research. (Lec. 3) Pre: 601 or permission of instructor. Staff
- 661 Product Management (I or II, 3) Development of product policies and strategies. Emphasis on organizing the marketing function to deal with various product-related activities including new product development, life cycle strategies, and product deletion. (Lec. 3) Pre: 601 or permission of instructor, Staff
- 691, 692 Directed Study in Marketing (I and II, 1-3 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of instructor. Staff
- 693 Internship in Marketing (I and II, 3) Participation in management and/or problem solving under the supervision and guidance of a sponsoring agency with evaluation by the Col-

- lege of Business Administration. (Practicum) Pre: proposal approved by the College of Business Administration, no previous internship credit, and graduate standing. S/U credit. Staff
- 695, 696 Seminar in Marketing (I and II, 3 each) Preparation and presentation of papers on selected topics in marketing. (Seminar) Pre: 601 or permission of instructor. Staff
- 697 Doctoral Research Seminar (I and II, 3) Provides a rigorous analysis of current research questions and research techniques used to address those questions in the academic discipline. Recent developments and current issues addressed. (Seminar) Pre: enrollment in Phase II of the Ph.D. program in business administration. Staff
- 699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) Pre: enrollment in Phase III of the Ph.D. program in business administration. S/U credit.

Mathematics (MTH)

Chairperson: Professor Montgomery

- 010 Basic Math (I and II, 3) Real numbers; operation with fractions and decimals. Proportions and related problems. Basic algebra: solving first-degree equations and systems of equations. Applications. (Lec. 3) S/U only. Credits may not be used toward the minimum credits required for graduation or for General Education. Staff
- 099 Basic Algebra and Trigonometry (I and II, 3) Review of basic algebra and trigonometry: operations of real numbers and algebraic expressions, negative and fractional exponents, polynomials and fractional expressions, equations and systems of equations, inequalities, right triangle trigonometry and applications. (Lec. 3) For students not sufficiently prepared to take other mathematics courses. Credits may not be used toward the minimum credits required for graduation or for General Education. S/U only. Staff
- 107 Introduction to Finite Mathematics (I and II, 3) Concepts and processes of modern mathematics concerned with sets, the theory of probability, and statistics. Role of these concepts in today's social and physical sciences. (Lec. 3) Pre: passing a placement test. Not open to mathematics majors. Staff (M)
- 108 Topics in Mathematics (I and II, 3) Introduces the nonmathematics student to the spirit of mathematics and its applications. Presup-

- poses no mathematical background beyond University admission requirements. Emphasis is on development of reasoning ability as well as manipulative techniques. (Lec. 3) Pre: passing a placement test. Not open to mathematics majors. Staff (M)
- 111 Precalculus (I and II, 3) Equations of first and second degree, systems of equations. Inequalities. Functions and graphs. Exponential, logarithmic, and trigonometric functions. Applications. Introduction to analytic geometry. Complex numbers. Designed for students who need to strengthen their background in mathematics below calculus. (Lec. 3) Pre: passing a placement test. Not for credit for mathematics majors. Staff (M)
- 131 Applied Calculus I (I and II, 3) Basic topics in calculus for students who do not need all the topics in 141. Limits, derivatives, and integrals of algebraic, logarithmic, and exponential functions. Applications including graphing, maxima and minima problems, etc. (Lec. 3) Pre: passing a placement test. Not for major credit in mathematics. Not open to students with credit or concurrent enrollment in 141. Staff (M)
- 132 Applied Calculus II (I, II, and SS, 3) Continuation of 131. Topics related to trigonometric functions, integration by parts and partial fractions, partial derivatives, infinite series. Applications to problems such as optimization, probability theory, simple differential equations. (Lec. 3) Pre: 131 or 141 or permission of chairperson. Not for major credit in mathematics. Not open to students with credit or concurrent enrollment in 142. Staff (M)
- 141 Introductory Calculus with Analytic Geometry (I and II, 4) Topics in analytic geometry, functions and their graphs, limits, the derivative, applications to finding rates of change and extrema and to graphing, the integral, and applications. (Lec. 3, Rec. 1) Completion of four units of high school mathematics, including trigonometry, recommended. Pre: passing a placement test. Not open to students with credit or concurrent enrollment in 131. Staff (M)
- 142 Intermediate Calculus with Analytic Geometry (I and II, 4) Continues the study of calculus for the elementary algebraic and transcendental functions of one variable. Topics include the technique of integration, improper integrals, indeterminate forms, and calculus using polar coordinates. (Lec. 3, Rec. 1) Pre: 141 or permission of chairperson. Not open to students with credit or concurrent enrollment in 132. Staff (M)

- 143 Computer Laboratory in Calculus (I and II. 1) Illustration of some concepts of elementary calculus using a computer; use of a computer in . some applications of calculus. Students will write simple programs. No previous computer or programming experience required. (Lec. 1, Lab. 2) Pre: credit or concurrent enrollment in 141. Staff
- 208 Mathematics for Elementary School Teachers (1 or 11, 3) Selected topics in mathematics central to the elementary school curriculum, including: problem solving; number systems; functions and relations; probability and statistics; geometry. (Lec. 3) Pre: admission to elementary education program and prior completion of General Education mathematics requirement. Not open to mathematics majors or mathematics education majors. Long
- 215 Introduction to Linear Algebra (1 and II, 3) Detailed study of finite dimensional vector spaces, linear transformations, matrices, determinants and systems of linear equations. (Lec. 3) Pre: 131, 141, or equivalent. Staff
- 243 Calculus for Functions of Several Variables (I and II, 3) Topics include coordinates for space, vector geometry, partial derivatives, directional derivatives, extrema, Lagrange multipliers, and multiple integrals. (Lec. 3) Pre: 142. Staff
- 244 Differential Equations (I and II, 3) Classification and solution of differential equations involving one independent variable. Applications to the physical sciences. Basic for further study in applied mathematics and for advanced work in physics and engineering. (Lec. 3) Pre: 243. Staff
- 307 Introduction to Mathematical Rigor (1, 3) Introduction to the language of rigorous mathematics: logic, set theory, functions and relations, cardinality, induction, methods of proof. Emphasis on precise written and oral presentation of mathematical arguments. (Lec. 3) Pre: 141. Staff
- 316 Algebra (II, 3) Theory and structure of groups. Topics from ring theory, principal ideal domains, unique factorization domains, polynomial rings, field extensions, and Galois theory. (Lec. 3) Pre: 215 and 307. Staff
- 322 Concepts of Geometry (1, 3) Survey of geometrical systems including non-Euclidean, affine, and projective spaces and finite geometries. A modern view of Euclidean geometry using both synthetic and analytic methods. (Lec. 3) Pre: 215 or permission of instructor. Staff

- 362 Advanced Engineering Mathematics I (II, 3) Algebra of complex numbers, matrices, determinants, quadratic forms. Linear differential equations with constant coefficients. Partial differential equations. (Lec. 3) Pre: 243. Not for major credit in mathematics. Staff
- 363 Advanced Engineering Mathematics II (I, 3) Laplace and Fourier transforms. Analytic functions. Cauchy's theorem and integral formula. Power series in the complex domain. Laplace and Fourier inverse integrals. Introduction to probability. (Lec. 3) Pre: 362 or equivalent. Not for major credit in mathematics. Staff
- 381 History of Mathematics (1, 3) General survey course in development and philosophy of mathematics. Provides a cultural background and foundation for advanced study in various branches of the subject. (Lec. 3) Pre: 142 or equivalent. Staff
- 382 Number Theory (II, 3) Some of the arithmetic properties of the integers including number theoretic functions, congruences, diophantine equations, quadratic residues, and classically important problems. (Lec. 3) Pre: 141 or permission of instructor. Staff
- 391 Special Problems (I and II, 1-3) Advanced work under the supervision of a member of the staff and arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. Staff
- 393 Undergraduate Seminar (I or II, 1) Preparation and presentation of selected topics in oral and written form. (Seminar) Pre: permission of chairperson. Staff
- 418 Matrix Analysis (1, 3) Canonical forms, functions of matrices, characteristic roots, applications to problems in physics and engineering. (Lec. 3) Pre: 215 or 362 or permission of instruc-
- 420 Topics in Foundations (1, 3) Especially designed for teachers of mathematics. Basic topics of mathematics from an advanced viewpoint, selected from sets, logic, mathematical structures, number theory, geometry. Coordinated with EDC 520 for students taking both concurrently. (Lec. 3) Pre: 142 or permission of instructor. Not for major or minor credit in mathematics. Staff
- 425 Topology (I, 3) Abstract topological spaces and continuous functions. Generalizations of some classical theorems of analysis. (Lec. 3) Pre: 307. Staff

- 435 Introduction to Mathematical Analysis I (1, 3) Sets and functions, real topology, continuity and uniform continuity, derivatives, the Riemann integral, improper integrals. Detailed proofs emphasized. (Lec. 3) Pre: 307. Staff
- 436 Introduction to Mathematical Analysis II (II, 3) Sequences and series of functions, implicit and inverse function theorems, topology of Euclidean space, transformation of multiple integrals. Detailed proofs emphasized. (Lec. 3) Pre: 435. Staff
- 437, 438 Advanced Calculus and Application I, II (I and II, 3 each) Sequences, limits, continuity, differentiability, Riemann integrals, functions of several variables, multiple integrals, space curves, line integrals, surface integrals, Green's theorem, Stokes' theorem, series, improper integrals, uniform convergence, Fourier series, Laplace transforms. Applications to physics and engineering emphasized. (Lec. 3) Pre: 243 for 437, 437 for 438. Staff
- 441 Introduction to Partial Differential Equations (1, 3) One-dimensional wave equation. Linear second order partial differential equations in two variables. Separation of variables and Fourier series. Nonhomogeneous boundary value problems. Green's functions. (Lec. 3) Pre: 244 or 442. Staff
- 442 (361) Introduction to Difference Equations (I or II, 3) Introduction to linear and nonlinear difference equations; basic theory, ztransforms, stability analysis, and applications. (Lec. 3) Pre: 243. Staff
- 444 Ordinary Differential Equations (II, 3) Introduction to fundamental theory of ordinary and functional-differential equations. Series and numerical methods. Topics from stability, periodic solutions, or boundary-value problems. Applications to physics, engineering, biology. (Lec. 3) Pre: 244 or 362 or 442. Staff
- 447 (or CSC 447) Discrete Mathematical Structures (I or II, 3) Concepts and techniques in discrete mathematics. Finite and infinite sets, graphs, techniques of counting, Boolean algebra and applied logic, recursion equations. (Lec. 3) Pre: junior standing or better in physical or mathematical sciences, or in engineering, or permission of instructor. Staff
- 451 Introduction to Probability and Statistics (I and II, 3) Theoretical basis and fundamental tools of probability and statistics. Probability spaces, properties of probability, distributions, expectations, some common distributions and elementary limit theorems. (Lec. 3) Pre: 243 or equivalent. Staff

- 452 Mathematical Statistics (II, 3) Continuation of 451 in the direction of statistics. Basic principles of statistical testing and estimation, linear regression and correlation. (Lec. 3) Pre: 451. Staff
- 456 Introduction to Random Processes (II, 3) Conditional probability and expectation. Mean and covariance functions. Calculus of random processes. Introduction to Gaussian processes, Poisson processes, stationary processes, and Markov chains with applications. (Lec. 3) Pre: 451 or equivalent. Staff
- 461 Methods of Applied Mathematics (1, 3) Topics selected from vector analysis, elementary complex analysis, Fourier series, Laplace transforms, special functions, elementary partial differential equations. Emphasis on development of techniques rather than mathematical theory. (Lec. 3) Pre: 244 or 362 or 442. Staff
- 462 Functions of a Complex Variable (II, 3) First course in the theory of functions of a single complex variable, including analytic functions, power series, residues and poles, complex integration, conformal mapping and applications. (Lec. 3) Pre: 243 or equivalent. Staff
- 464 Advanced Engineering Mathematics III (II, 3) Topics from Fourier series and integrals. Partial differential equations and boundary value problems. Bessel functions and Legendre polynomials. Conformal mappings. (Lec. 3) Pre: 362 and 363 or permission of instructor. Not for graduate credit in mathematics. Staff
- 471 Introduction to Numerical Analysis I (1, 3) Interpolation, solution of nonlinear equations, numerical evaluation of integrals, special topics. (Lec. 3) Pre: 243, CSC 201 or equivalent, or permission of instructor. Staff
- 472 Introduction to Numerical Analysis II (II, 3) Numerical solution of ordinary differential equations, systems of linear equations, least squares, approximation, special topics. (Lec. 3) Pre: 243, CSC 201 or equivalent, or permission of instructor. Staff
- 492 Special Problems (I and II, 1-3) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. Staff
- 513 Linear Algebra (1, 3) Linear spaces and transformations, linear functionals, adjoints, projections, diagonalization, Jordan form of matrices, inner products; positive, normal, selfadjoint, and unitary operators; spectral theorem, bilinear and quadratic forms. (Lec. 3) Staff

- 515, 516 Algebra I, II (I and II, 3 each) Groups, rings, modules, commutative algebra. (Lec. 3) Pre: 316. In alternate years. Next offered 1996-97. Staff
- 525 Topology (II, 3) Topological spaces, separation properties, connectedness, compactness, uniformities. Function spaces, spaces of continuous functions, and complete spaces. (Lec. 3) Pre: 425 or equivalent. In alternate years. Next offered spring 1997. Staff
- 535, 536 Measure Theory and Integration (I and II, 3 each) Elements of topology and linear analysis. Lebesque measure and integration in R, in Rn, and in abstract spaces. Convergence theorems. Bounded variation, absolute continuity, and differentiation. Lebesque-Stieltjes integral. Fubini and Tonelli theorems, The classical Banach spaces. (Lec. 3) Pre: 435. Staff
- 545, 546 Ordinary Differential Equations 1, II (I and II, 3 each) Existence and uniqueness theorems. Continuous dependence on parameters and initial conditions. Singularities of the first and second kinds, self-adjoint eigenvalue problems on a finite interval. Oscillation and comparison theorems. Introduction to delay and difference equations. Elements of stability theory of Lyapunov's second method. (Lec. 3) Pre: 435. In alternate years. Next offered 1995-96. Staff
- 547 (or CSC 547) Combinatorics and Graph Theory (1, 3) Enumeration: generating functions, recurrence relations, classical counting numbers, inclusion-exclusion, combinatorial designs. Graphs and their applications: Euler tours, Hamilton cycles, matchings and coverings in bipartite graphs, the four-color problem. (Lec. 3) Pre: 215 or equivalent. In alternate years. Next offered fall 1996. Staff
- 548 Topics in Combinatorics (II, 3) Topics such as Ramsey theory, Polya theory, network flows and the max-flow-mincut variations, applications in operations research; finite fields and algebraic methods; block designs, coding theory, other topics. (Lec. 3) Pre: 547 or permission of instructor. In alternate years. Next offered spring 1997. Staff
- 550 Probability and Stochastic Processes (1, 3) Review of probability theory. Generating functions, renewal theory, Markov chains and processes, Brownian motions, stationary processes. (Lec. 3) Pre: 437 or 435 and 451, or permission of instructor. In alternate years. Next offered fall 1996. Staff
- 551 Mathematical Statistics (II, 3) Theory of estimation and hypothesis testing. Large sample methods. Regression and analysis of variance.

- (Lec. 3) Pre: 437 or 435 and 451, or permission of instructor. In alternate years. Next offered spring 1997. Staff
- 561 Advanced Applied Mathematics (II, 3) Linear spaces, theory of operators. Green's functions, eigenvalue problems of ordinary differential equations. Application to partial differential equations. (Lec. 3) Pre: 461. Staff
- 562 Complex Function Theory (1, 3) Rigorous development of theory of functions. Topology of plane, complex integration, singularities, conformal mapping. (Lec. 3) Pre: 435 and 436 or 437 and 438 and permission of instructor. In alternate years. Next offered fall 1995. Staff
- 572 Numerical Analysis (II, 3) Further numerical methods of solution of simultaneous equations, partial differential equations, integral equations. Error analysis. (Lec. 3) Pre: 472. Staff
- 575 Approximation Theory and Applications to Signal Processing See Electrical Engineering 575.
- 591, 592 Special Problems (I and II, 1–3 each) Advanced work under the supervision of a member of the department arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson.
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 629, 630 Functional Analysis I, II (I and II, 3 each) Banach and Hilbert spaces, basic theory. Bounded linear operators, spectral theory. Applications to analysis. Application to a special topic such as differential operators, semigroups and abstract differential equations, theory of distributions, or ergodic theory. (Lec. 3) Pre: 536 or permission of instructor. Staff
- 641 Partial Differential Equations I (1, 3) First order systems. The Cauchy-Kowalewsky theorem. The Cauchy problem. Classification of partial differential equations. Hyperbolic equations. Mainly the theory of the subject. Students interested in techniques for the solution of standard equations should take 441. (Lec. 3) Pre: 215, 435, and 462. In alternate years. Next offered fall 1996. Staff
- 642 Partial Differential Equations II (II, 3) Elements of potential theory. Elliptic equations. Green's function. Parabolic equations. Introduction to the theory of distributions. (Lec. 3) Pre: 641. In alternate years. Next offered spring 1997. Staff

691, 692 Special Topics I, II (I and II, 3 each) Advanced topics of current research in mathematics will be presented with a view to expose the students to the frontiers of the subject, (Independent Study) Pre: permission of chairperson. Staff

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

930 Workshop in Mathematics Topics for Teachers (I and II, 0-3) Especially designed for teachers of mathematics. Basic topics of mathematics from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification. Not for degree credit. Staff

Mechanical Engineering and Applied Mechanics (MCE)

Chairperson: Professor Sadd

162 Statics (I and II, 3) Newton's laws of force systems in equilibrium and their effects on particles, systems of particles, and rigid bodies. Both scalar and vector methods of analysis developed. (Lec. 3) Pre: MTH 141. Staff

220 Computer Graphics in Mechanical Engineering (1, 3) Introduction to the principles of graphic representation in mechanical design with emphasis on computer-aided drafting using commercially available software. Computerassisted problem solving, including plotting. (Lec. 2, Lab. 3) Pre: CSC 200 and MTH 142. Palm

263 Dynamics (I and II, 3) Kinematic and kinetic study of motion of particles, systems of particles, and rigid bodies, acted upon by unbalanced force systems, using both scalar and vector methods; development of methods of analysis based on the direct application of Newton's laws, work-energy and impulsemomentum principles. (Lec. 3) Pre: 162. Staff

317, 318 Mechanical Engineering Experimentation I, II (I and II, 3 each) An integrated laboratory sequence for the junior and senior years; static and dynamic characteristics of instruments, calibration, experimental error propagation, planning of experiments from dimensional and error considerations, and a broad range of laboratory experiments in mechanical engineering. (Lec. 2, Lab. 3) Pre: CSC 200, CVE 220, MCE 341 or equivalent for 317; 317 for 318. Jouaneh, Shukla, and Taggart

323 Kinematics (I, 3) Analysis of mechanisms by analytical and related graphical methods; linkages, cams, gears, gear trains, differential mechanisms, escapements, computing, and miscellaneous mechanisms; vector methods including complex exponential representation of a vector in a plane. (Lec. 3) Pre: 220, 263, and CSC 200. Datseris and Olson

341 Fundamentals of Thermodynamics (I and II, 3) Basic principles and laws of thermodynamics and their relation to pure substances. ideal gases, and real gases. Use of thermodynamic property tables. Development of concepts of reversibility and availability. Thermodynamic diagrams and processes. (Lec. 3) Pre: 263, MTH 243, credit or concurrent enrollment in PHY 341. Zhang and Ibrahim

342 Mechanical Engineering Thermodynamics (I and II, 3) Continuation of 341 including mixtures of gases and vapors, topics of gas dynamics and chemical thermodynamics, applications of thermodynamics to power cycles and refrigeration processes. (Lec. 3) Pre: 341 and CSC 200. Zhang and Ibrahim

354 Fluid Mechanics (I and II, 3) Physical properties of fluids, development of continuity, energy, and momentum concepts using vector methods; application to problems involving viscous and nonviscous fluids including boundary layer flows, flows in closed conduits and around immersed bodies. (Lec. 3) Pre: 263, CSC 200, and MTH 244 or 461. Lessmann and White

366 Introduction to Systems Engineering (II, 3) Systems analysis emphasizing control and vibration. Time and frequency domain techniques. Modeling of typical mechanical, hydraulic, pneumatic, and thermal systems. Transfer functions and block diagram methods. Elementary control laws. (Lec. 3) Pre: 372, CSC 200, and MTH 244, or permission of instructor. Palm

372 Engineering Analysis I (I, 3) Application of advanced mathematical methods to solution of mechanical engineering problems with emphasis on the techniques of engineering analysis. (Lec. 3) Pre: CSC 200, MTH 244, and junior standing. Staff

373 Engineering Analysis II (II, 3) Continuation of 372. (Lec. 3) Pre: 372. Staff

423 Design of Machine Elements (1, 3) Design of machinery involving strength of materials, adequacy of design, factor of safety, stress concentration, fatigue, creep, power transmission devices, gears, springs, shafts, fasteners, ball

bearing reliability, associated computer methods. (Lec. 3) Pre: 317, 323, 372, CHE 333, and CVE 220. Olson, Jouaneh, and Datseris

426 Advanced Mechanics of Materials (1, 3) Introduction to continuum mechanics: stress, strain and deformation, constitutive equations. Theories of failure. Shear center and unsymmetrical bending of beam. Curved beams. Energy method, Torsion, (Lec. 3) Pre: CVE 220. Ghonem, Shukla, and Kim

429 Comprehensive Design (II, 3) Creative design of engineering systems including socioeconomic and ecological considerations, design, and analysis projects. Advanced topics in design, reliability and probability considerations, optimum design, case studies, associated computer methods. (Lec. 3) Pre: 423. Staff

430 Computer-Aided Design (I or II, 3) Constructive solid geometric modeling of 3-D objects, simulation of kinematics and dynamics of mechanisms. Mechanism design for various kinematic and dynamic requirements. Stress analysis and design of mechanical devices. (Lec. 3) Pre: 323, CSC 200, and CVE 220. Datseris. Olson, and Jouaneh

431 Computer Control of Mechanical Systems (II, 3) Integrated study of hardware and software aspects of microcomputer-based systems with emphasis on interfacing to external hardware for online measurement, data acquisition, and control of mechanical systems. (Lec. 3) Pre: 366 and CSC 200. Palm and Jouaneh

434 Thermal Environmental Engineering (II, 3) Application of the principles of thermodynamics and heat transfer to environmental problems. Topics will include thermal control of living spaces, solar heating and cooling, heat pumps, minimum energy consumption. (Lec. 3) Pre: 342, 354, and 448. Zhang

437 Turbomachinery Design (1, 3) Application of the principles of thermodynamics and fluid mechanics to the design of rotating machinery such as turbines, compressors, centrifugal and axial flow pumps. (Lec. 3) Pre: 341 and 354. Lessmarin

438 Internal Combustion Engines (1, 3) Principles, design, and operation of internal combustion engines, including cycles, combustion, fuels, detonation, carburetion, cooling, supercharging, ignition, friction, and lubrication. Gasoline and diesel, two- and four-stroke cycles, and performance of various engines including the Wankel rotary. (Lec. 3) Pre: 342. Ibrahim

439 Applied Energy Conversion (II, 3) Modern power systems including steam and gas turbines, nuclear power stations, fuel cells, and thermionic and thermoelectric devices. (Lec. 3) Pre: 342 and 448, or permission of instructor. Staff

440 Mechanics of Composite Materials (II, 3) Introduction to the basic concepts of the mechanical behavior of composite materials. Analysis and performance of fiber-reinforced composites. Special design considerations and experimental characterization of composites. (Lec. 3) Pre: 317 and CVE 220, or permission of instructor. Shukla and Taggart

446 Metal Deformation Processes See Industrial and Manufacturing Engineering 446.

448 Heat and Mass Transfer (1, 3) Transfer of heat by conduction, convection, and radiation in steady and unsteady states. Theory and application of dimensional analysis; heat and mass transfer in equipment such as heat exchangers and steam condensers. (Lec. 3) Pre: 341 and 372. Staff

449 Product Design for Manufacture See Industrial and Manufacturing Engineering 449.

455 Advanced Fluid Mechanics (1, 3) Continuation of 354. Selected topics in advanced fluid mechanics including potential flows, compressible flow, fluid machinery, and electric and magnetic field effects. (Lec. 3) Pre: 354. Lessmann and White

464 Vibrations (II, 3) Elementary theory of mechanical vibrations, including the one-degreeof-freedom system, multimass systems, vibration isolation, torsional vibration, beam vibration, critical speeds, and vibration instruments. (Lec. 3) Pre: 366 or permission of instructor. Staff

465 Experimental Mechanics (1, 3) Theory and application of various experimental techniques used in solid mechanics such as acoustic emission, holography, interferometry, strain gauges, brittle coatings, and photoelasticity. (Lec. 2, Lab. 3) Pre: 317 and CVE 220. Shukla

466 Introduction to Finite Element Method (II, 3) Application of the finite element method to problems in mechanical engineering including plane elasticity, heat transfer, and fluid mechanics. Basic concepts, matrix formulation, interpolation functions, basic element types, and implementation to problem solution. (Lec. 3) Pre: 373 and CVE 220. Taggart and Sadd

491, 492 Special Problems (I and II, 1-6 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. Staff

501, 502 Graduate Seminar (I and II, 1 each) Discussions, presentation of papers based on research, or detailed literature surveys. Attendance is required of all students in graduate residence. (Seminar) S/U credit. Staff

503 Linear Control Systems See Electrical Engineering 503.

504 Optimal Control Theory See Electrical Engineering 504.

506 Expert Systems for Mechanical Design and Manufacturing (1, 3) Expert systems structure; knowledge bases, inference engines, and artificial intelligence languages. Applications to mechanical design and manufacturing problems. Graph theory and expert systems for mechanism design; features for design and manufacturing. (Lec. 3) Pre: 430 or equivalent. Datseris or Olson

523 Advanced Kinematics I (II, 3) Analytical kinematic and dynamic analysis of planar mechanisms, graph theory, topological synthesis, topological analysis, Burmester theory, mechanism design software. (Lec. 3) Pre: 323 or equivalent. Datseris or Olson

530 Real-Time Monitoring and Control (I or II, 3) Fundamentals of the development of realtime software for monitoring and control. Synchronous programming, timing, interrupt programming, operator's console control, and scheduling. Laboratory exercises. (Lec. 3) Pre: graduate standing or permission of instructor. Jouaneh

541 Advanced Thermodynamics I (I or II, 3) Advanced study of classical thermodynamics. with emphasis on basic concepts, laws, and thermodynamic relationships. Selected topics of current interest including areas of irreversible thermodynamics, statistical mechanics, and the thermodynamics of solids. (Lec. 3) Pre: 341, 342, or permission of instructor. Zhang and

545 Heat Transfer (1, 3) Conduction in two and three dimensions and conducting systems with radiation and fluid motion. Solutions obtained by mathematics, computer-numerical methods, and analog devices. (Lec. 3) Pre: 448. Faghri and Zhang

546 Convection Heat Transfer (II, 3) Relationship between heat transfer and fluid flow with emphasis on the solution of governing equations by exact methods, integral methods, and similarity techniques. (Lec. 3) Pre: 448. White, Faghri, and Zhang

549 Advanced Product Design for Manufacture

See Industrial and Manufacturing Engineering

550 Theory of Continuous Media (1, 3) Basic course for first-year graduate students which develops and unifies the laws of mechanics as applied to the behavior of continua. Application to solids and fluids. (Lec. 3) Pre: CVE 220, MCE 354, 372, or permission of instructor, Sadd

551 Fluid Mechanics I (1, 3) Basic treatment of real fluid flows using the continuum mechanics approach. Exact solutions of the governing equations. Laminar shear flows and boundary layer theory, turbulent transition. (Lec. 3) Pre: 354 or equivalent. Lessmann and White

561 Computational Methods in Solid Mechanics (I or II, 3) Finite and boundary element methods based on variational and weighted residual concepts; practical implementation to field problems in elasticity, plasticity, and heat conduction. (Lec. 3) Pre: 373 and one graduate course in elasticity or heat conduction. Sadd and Taggart

562 Computational Methods in Fluid Flow and Heat Transfer (I or II, 3) Computational techniques and applications for practical problems concerning multidimensional fluid flow, heat and mass transfer, and chemical reactions. (Lec. 3) Pre: undergraduate work in fluid mechanics and heat transfer or permission of instructor. Faghri

563 Advanced Dynamics (I and II, 3) Dynamics of a system of particles, Lagrange's equations from an advanced point of view. Variational methods, nonconservative and nonholonomic systems; matrix-tensor specifications of rigid body motions, normal coordinates. Hamilton's equation of motion, canonical transformation, Hamilton-Jacobi theory. (Lec. 3) Pre: 366 and 372 or equivalent. Datseris

564 Advanced Vibrations (I, 3) Theory of vibration of systems with concentrated masses and stiffness; systems with one degree of freedom, vibration isolation systems with many degrees of freedom, matrix methods, dynamic vibration absorbers, torsional vibration, approximate numerical methods. Experimental methods and design procedures. (Lec. 3) Pre: 464. Palm

565 Wave Motion and Vibration of Continuous Media (II, 3) Wave motion and vibrations of strings, rods, beams, plates, and membranes; dynamic elasticity theory; Rayleigh surface waves; solutions using separation of variables and integral transforms. (Lec. 3) Pre: 373, 464. or equivalent. Sadd and Shukla

566 The Mechanics of Robot Manipulators (I or II, 3) Detailed analysis of the kinematics, dynamics, and control of industrial-type robot manipulator systems. (Lec. 3) Pre: 323, 366, or permission of instructor. Palm and Iouaneh

568 Theory of Plates See Civil Engineering 568.

571 Theory of Elasticity I (1, 3) Development of the basic field equations; generalized Hooke's law; general concepts of stress and strain; plane problems: stress functions: Saint Venant torsion and flexure; introduction to three-dimensional problems. (Lec. 3) Pre: CVE 220 or equivalent. Sadd, Ghonem, Shukla, and Taggart

576 Fracture Mechanics (II, 3) Fundamentals of linear elastic fracture mechanics, stress analysis viewpoint, energy viewpoint, two-dimensional and three-dimensional problems, elastic-plastic considerations, and crack extension behaviors. (Lec. 3) Pre: 426 or permission of instructor. Shukla and Ghonem

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

623 Advanced Kinematics II (1, 3) Planar, curvature theory, spatial kinematics: homogeneous transformations, screw theory, quaternions, dual numbers, angles, and vectors, applications to robot and machine tool calibration. (Lec. 3) Pre: 523 or permission of instructor. Datseris and

646 (or CHE 646) Radiation Heat Transfer (I or II, 3) Radiant exchange between surfaces. Radiative properties of surfaces. Exchange among nonideal surfaces. Gas-radiative exchange. Radiative exchange with volume emitters. Furnace design applications. (Lec. 3) Pre: 545 or CHE 644 or permission of instructor. Staff

652 Experimental Methods in Fluid Mechanics (II, 3) An overview of measurement techniques and instrumentation used in the current practice of experimental fluid mechanics. Course emphasizes hot wire, hot film, and laser anemometry. Provides practical laboratory experience. (Lec. 2, Lab. 3) Pre: 551 or permission of instructor. Lessmann

653 Fluid Mechanics II (II, 3) Continuation of 551, including turbulent modeling, turbulent shear flows and boundary layers, incompressible irrotational flows, and selected topics such as an introduction to non-Newtonian fluid behavior, geophysical flows, or numerical methods, (Lec. 3) Pre: 551. Lessmann and White

654 Fluid Mechanics III (1, 3) Two- and threedimensional compressible flows, numerical methods for the solution of compressible and incompressible parabolic and elliptic problems. Other advanced topics of current interest. (Lec. 3) Pre: 551. Lessmann and White

666 Nonlinear Mechanics (I and II, 3) Dynamics of nonlinear systems, free and forced oscillations; graphical methods, integral curves, singular points, limit cycles and stability. Van der Pol equation, perturbation methods, approximate methods, application to ecological systems. (Lec. 3) Pre: 564. Staff

668 (or CVE 668) Theory of Shells (1 or 11, 3) Development of basic shell equations. Classical solution examples for membrane shells and shells of revolution with bending. Additional topics selected from variational methods, finite element techniques, reinforced and composite shells. (Lec. 3) Pre: 568 or permission of instructor. Sadd and Karamanlidis

671 Theory of Elasticity II (II, 3) Continuation of 571, including advanced topics selected from: complex variable methods; displacement potentials and stress functions for three-dimensional problems; thermoelasticity; variational, approximate, and numerical methods; anisotropic solutions. (Lec. 3) Pre: 571. Sadd and Taggart

678 Micromechanics (II, 3) Mechanics of material behavior from the microstructural viewpoint; mathematical modeling of inclusions, inhomogeneities, dislocations, granular and porous structures; constitutive equation development. Applications to metals, composites, ceramics, and other materials with microstructure. (Lec. 3) Pre: 571, materials background of CHE 333 or higher. Ghonem and Taggart

679 Theory of Plasticity (II, 3) Formulation and solution of inelastic material behavior, physical phenomena of yielding plastic flow, plastic stress-strain laws, yield criteria, plane problems, torsion, slip lines, limit analysis, creep. (Lec. 3) Pre: 571 or permission of instructor. Ghonem and

680 Advanced Topics in Solid Mechanics (I or II, 3) Advanced studies in the mechanics of solids with specific topics determined by current

department interests. Designed for students with at least one year of previous graduate studies. (Lec. 3) Pre: permission of instructor. May not be repeated. Staff

691, 692 Special Problems (I and II, 1-6 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. May be repeated for a maximum of 12 credits. Staff

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Medical Technology (MTC)

Coordinator: G. Paquette

102 Introduction to Medical Technology (l, 1) An introduction to medical technology including specialty areas of medical laboratory sciences, professional organizations, credentialing, the team concept, and professionalism. (Lec. 1) **Paquette**

202 Introduction to Clinical Laboratory Methods (II, 3) Introduction to fundamental methods and concepts used in clinical chemistry, hematology, and immunohematology; clinical training at URI Health Services laboratory. (Lec. 2, Lab. 3) Pre: one semester of biology and chemistry or permission of instructor. Paquette

The clinical courses in medical technology (MTC 401-407) require senior standing and are open only to students who have been accepted into an affiliated Hospital School of Medical Technology.

401 Clinical Microbiology (1, 8) The relationship of bacteria and bacterial diseases of man with emphasis on the application of procedures to medical diagnosis. Fungi, viruses, the rickettsias, and human parasites are also studied. (Practicum) Hospital Staff

402 Clinical Chemistry (II, 8) The chemistry of body constituents and their relationship to diagnosis of human disease. Principles and methods of analysis are emphasized. (Practicum) Hospital

403 Immunohematology (1, 4) Instruction in drawing and processing blood and in ascertaining compatibility. Donor-recipient blood and tissue reactions are studied in detail. (Practicum) Hospital Staff

404 Hematology (II, 6) Morphology of the blood and blood-forming organs and the study of abnormalities associated with disease. The

- dynamics and diagnostic tests of hemostasis are also discussed. (*Practicum*) Hospital Staff
- **405** Pathophysiology (1, 2) An introduction to pathology. The correlation between pathological processes and clinical symptoms and the course of disease is studied. (*Practicum*) Hospital Staff
- **406 Clinical Immunology** (*II*, 2) Formation, structure, and action of antigens and antibodies. Methods of immunization. The laboratory emphasizes serological procedures in the diagnosis of disease. (*Practicum*) Hospital Staff
- **407 Clinical Microscopy** (1, 2) Lectures and laboratory practice in the analyses of body fluids. (*Practicum*) Hospital Staff
- 483 Introductory Diagnostic Microbiology See Microbiology 483.
- 501 (or MIC 501) Advanced Clinical Microbiology I (I or II, 3) Current methodology employed in the processing of clinical microbiology specimens, isolation and identification of pathogenic microorganisms, and determination of antimicrobial susceptibility. (Lec. 3) Pre: 401 or MIC 432 or equivalent. Blazek-D'Arezzo and Stottmeier
- 502 Advanced Clinical Chemistry I (1 or II, 3) The pathophysiologic mechanisms as they correlate to clinical chemistry data. Topics include mechanisms of pathology and analytical techniques. (Lec. 3) Pre: 402 or equivalent. Canick and Sheff
- 510 Clinical Laboratory Management (I or II, 3) Supervisory management principles applicable to the clinical laboratory. Includes the processes of supervision, decision making, job performance and evaluation, communications, organizational behavior, and labor relations in the modern laboratory. (Lec. 3) Pre: 400-level medical technology internship or equivalent.

 Aucoin and Williams
- 512 Special Problems in Clinical Laboratory Science (I or II, 3) Assigned research on an advanced level. Students required to outline problem, conduct the necessary research or experimental work, and present observations and conclusions in a written and oral report. (Independent Study) Pre: 400-level medical technology internship or equivalent. Staff
- 513 (or MIC 513) Advanced Clinical Immunology (I or II, 3) Theory, application, and techniques used in clinical immunology: immunochemistry, serology, immunohematology, immunopathology. (Lec. 3) Pre: 406 or MIC 533 or equivalent. LaFazia and Meglio

- **520** Advanced Hematology I (I or II, 3) Special problems, advanced techniques, and methodology in hematology; laboratory approach emphasized. (Lec. 3) Pre: 404 or equivalent. Barker
- 521 Advanced Hematology II (I or II, 3) Hematologic disorders: mechanisms, pathogenesis, diagnosis, and treatment; clinical approach emphasized. (Lec. 3) Pre: 404 or equivalent. Barker
- 530 Advanced Immunohematology (I or II, 3) Blood grouping and blood banking with emphasis on recent advances. Techniques used for identification of immune disorders, component preparation, tests to determine compatibility. (Lec. 3) Pre: 403 or equivalent. Kenney and Lewandowski
- 541 Advanced Clinical Microbiology II (I or II, 3) Current research and clinical methodology in clinical mycology, parasitology, mycobacteriology, epidemiology, and infectious disease serology. (Lec. 3) Pre: 401 or MIC 432 or equivalent. Blazek-D'Arezzo and Stottmeier
- 543 Advanced Clinical Chemistry II (I, II, or SS, 3) A comprehensive study of pathophysiologic mechanisms as they relate to clinical chemistry. Topics include immunochemistry, automation, enzymology, pharmacology, and endocrinology. (Lec. 3) Pre: 402 or equivalent. Canick and Sheff
- 551 Topics in Biochemistry for the Clinical Scientist

See Biochemistry 551.

- **561 Introduction to Cytotechnology** (*I*, *3*) A review of cell and tissue structure, principles of microscopy, and cytological staining methods; overview of organization and management of cytology labs. (*Practicum*) *Pre: open only to students who have been accepted into an affiliated hospital school of cytotechnology*. Clinical Staff
- 562 Special Topics in Cytotechnology (II, 3) Special projects in cytology, cytopathology, or cytotechnology. Students will investigate or review a topic and present a written and oral report. (Practicum) Pre: open only to students who have been accepted into an affiliated hospital school of cytotechnology. Clinical Staff
- 563 Cytopathology (I, 3) Cytopathology and clinical aspects of cervical dysplasia, carcinoma in situ, and invasive squamous cell carcinoma. Endometrial and endocervical carcinoma and other genital tract cancers will be considered. (Practicum) Pre: open only to students who have been accepted into an affiliated hospital school of cytotechnology. Clinical Staff

- 564 Medical Cytology (II, 3) Benign and malignant cytology of the gastrointestinal, respiratory, and urinary tracts; study of exfoliative cells in urine, serious effusions, cerebrospinal fluid, and breast secretions. (Practicum) Pre: open only to students who have been accepted into an affiliated hospital school of cytotechnology. Hospital Staff.
- 565 Cytology Practicum 1 (I, ·6) Microscopic evaluation and screening of benign cytological smears from cervical dysplasia, carcinoma in situ, and invasive malignant tumors of the female genital tract. (Practicum) Pre: open only to students who have been accepted into an affiliated hospital school of cytotechnology. Hospital Staff
- 566 Cytology Practicum II (II, 6) Microscopic evaluation and screening of cytological smears from the gastrointestinal, urinary, respiratory, and central nervous systems and from other body fluids. (Practicum) Pre: open only to students who have been accepted into an affiliated hospital school of cytotechnology. Clinical Staff.
- **590** Special Problems in Clinical Chemistry (*I*, *II*, or SS, 1–6) Intensive tutorial work, research, and readings in clinical chemistry. (*Independent Study*) Pre: graduate standing and permission of chairperson. Staff
- 591 Special Problems in Clinical Microbiology (I, II, or SS, 1–6) Intensive tutorial work, research, and readings in clinical microbiology. (Independent Stüdy) Pre: graduate standing and permission of chairperson. Staff
- **592 Special Problems in Hematology** (I, II, or SS, 1–6) Intensive tutorial work, research, and readings in hematology. (Independent Study) Pre: graduate standing or permission of chairperson. Staff
- 593 Special Problems in Immunohematology (I, II, or SS, 1-6) Intensive tutorial work, research, and readings in immunohematology. (Independent Study) Pre: graduate standing and permission of chairperson. Staff

Medicinal Chemistry (MCH)

Chairperson: Professor Panzica

342 Pharmaceutical Analysis (I and II, 3) Principles and techniques of official and nonpharmaceutical necessities, raw natural products, and radiopharmaceuticals. (Lec. 2, Lab. 3) Pre: CHM 226, 227, 228 or equivalent. Staff

343 Principles of Medicinal Chemistry (1, 2) Chemical, physicochemical, and biomolecular principles affecting drug delivery and action including biotransformation, isosteres, and MRI. (Lec. 2) Pre: CHM 226, 227, 228, BCH 311 or equivalent. Staff

443, 444 Organic Medicinal Chemistry (I and II, 3 each) Selected compounds of medicinal and pharmaceutical importance. Uses, syntheses, incompatibilities, correlation of physical properties, structures, and biological activity. (Lec. 3) Pre: 342, 343, CHM 228, and/or permission of instructor, Abushanab, Cho, and Panzica

497, 498 Special Problems (1 and 11, 1-5 each) Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Independent Study) Pre: permission of chairperson. Staff

526 Lipid Chemistry See Food Science and Nutrition 526.

548 (or PCG 548) Physical Methods of Identification (II, 3) Utilization of physical methods (primarily spectroscopic) in the structure elucidation of complex organic molecules. Emphasis on interpretation of ultraviolet, infrared, nuclear magnetic resonance, mass, and optical rotatory dispersion spectra. (Lec. 3) Pre: CHM 425 and/or permission of instructor. Staff

549 Synthesis (I and II, 3) Theoretical and applied aspects in synthesis of selected organic compounds of medicinal significance. (Lec. 1, Lab. 6) Staff

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

621, 622 Seminar (I and II, 1 each) Seminar discussions including student presentations of papers on selected topics in medicinal chemistry. (Seminar) May be repeated for a maximum of 3 credits, S/U credit, Staff

643 Advanced Organic Medicinal Chemistry (II, 3) Synthesis, modes of action, and effects on pharmacological activity. Analgesics, cholinergics, folic acid antagonists, diuretics, and sulfonamides are included. (Lec. 3) Pre: CHM 522. In alternate years. Next offered 1995-96. Staff

646 Alkaloids (I, 3) Advanced course dealing with proof of structure, synthesis, chemical properties, and biological activity of various alkaloids. (Lec. 3) Abushanab

697, 698 Research in Medicinal Chemistry (/ and II, 1-3 each) Literature survey, laboratory work, and a detailed research report on one or more assigned topics in medicinal chemistry. (Independent Study) Staff

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Microbiology (MIC)

Chairperson: Professor Laux (Biochemistry, Microbiology, and Molecular Genetics)

201 Introductory Medical Microbiology (I and II. 4) Required of all students in nursing, dental hygiene, and pharmacy. Lecture and laboratory designed to illustrate microbiological principles and techniques. For students in allied health professions. (Lec. 3, Lab. 3) Pre: one semester of biology and one year of chemistry. Not open to students with credit in 211. Staff

211 Introductory Microbiology (I or II, 4) Introduction to microorganisms. Morphology, structure, metabolism, genetics, growth, populations in natural habitats, and their effects on the environment. For biological sciences majors. (Lec. 3, Lab. 3) Pre: two semesters of biology, one semester of organic chemistry, which can be taken concurrently. Not open to students with credit in 201. Staff

333 immunology and Serology (1, 3) Introduction to the immune response; host resistance to infection; immunopathology; antibodies, antigens, and use of serological techniques. (Lec. 2, Lab. 3) Pre: 201 or 211. Laux

401 Quantitative Cell Culture See Biochemistry 401.

403 Introduction to Electron Microscopy See Biochemistry 403.

405 (or BCH 405) Electron Microscopy Laboratory (1, 2) Introduction to the practical aspects of electron microscopy. Emphasis on acquisition of the following skills: tissue preparation, ultramicrotomy, operations of the electron microscope, and darkroom procedures. (Lab. 6) Pre: credit or concurrent enrollment in 403. Hufnagel

412 Food Microbiology (II, 3) Analysis of water and milk; examination of dairy and other food products. (Lec. 2, Lab. 4) Pre: 201 or 211 and one semester of biochemistry, which may be taken concurrently. Staff

413 Advanced Microbiology Lecture I (1, 3) The physiology, genetics, developmental, and molecular biology of microorganisms. (Lec. 3) Pre: 211, credit or concurrent enrollment in BCH 311 and BOT 352, or permission of instructor. Cohen and Nelson

414 Advanced Microbiology Lecture II (II, 3) The structural, developmental, and physiological diversity of microorganisms; symbiotic relationships, molecular basis of ecology, and the role of microorganisms in the soil and water environment, (Lec. 3) Pre: 211, credit or concurrent enrollment in BCH 311, or permission of instructor. Nelson and Hufnagel

415 Advanced Microbiology Laboratory I (I, 2) Introduction to techniques and methods for advanced study of microbial genetics, physiology, molecular, and developmental biology of microorganisms. (Lab. 6) Pre: concurrent enrollment in 413 or permission of instructor. Cohen and Nelson

416 Advanced Microbiology Laboratory II (II, 2) Techniques and methods for the advanced study of microorganisms with emphasis on the study of representative groups of microorganisms and the application of these techniques to soil and aquatic environments. (Lab. 6) Pre: concurrent enrollment in 414 or permission of instructor. Hufnagel and Nelson

421 Cell Biology and Cancer See Biochemistry 421.

422 Biotechnology of Industrial Microorganisms

See Food Science and Nutrition 422.

432 Pathogenic Bacteriology (II, 3) The more important microbial diseases, their etiology, transmission, diagnosis, and control. Laboratory, emphasis on methods of diagnosis. (Lec. 2, Lab. 3) Pre: 201 or 211 or one semester of organic chemistry. Sperry

451 Laboratory in Cell Biology See Botany 451.

453 Cell Biology See Botany 453.

483 (or MTC 483) Introductory Diagnostic Microbiology (1, 3) Supervised practical experience and training in clinical microbiology conducted at URI Health Services. (Practicum) Pre: credit or concurrent enrollment in 432. Paquette

491, 492 Research in Microbiology (I and II, 1-6 each) Special problems in microbiology. Student required to outline a problem, carry on experimental work, and present conclusions in a report. (Independent Study) Open only to seniors in microbiology. A maximum of 6 credits can be taken for major credit, Staff

495 Seminar in Microbiology (I and II, 1)
Preparation and presentation of papers on selected subject in microbiology. (Seminar) S/U credit. Staff

501 Advanced Clinical Microbiology I See Medical Technology **501**.

502 (or BCH 502) Techniques in Microbial and Molecular Genetics (II, 2) Techniques for the study of molecular genetics in bacteria and bacteriophages including mutant isolation, phage growth, transformation, transduction, conjugation, DNA isolation and analysis, and gene cloning. (Lab. 6) Pre: 413 and 415 or BOT 437 or BOT 454 or BOT 522 or permission of instructor. Nelson or Cohen

503 (or BCH 503) Electron Microscopy (1, 2) Biological specimen preparation techniques for transmission and scanning electron microscopy. Includes thin sectioning, negative staining, shadow-casting, freeze-etching, cytochemistry, principles of electron microscope operation. Final written and oral reports. (Lec. 2) Pre: graduate standing or permission of instructor. Not open to students with credit in 403. Hufnagel

505 (or BCH 505) Laboratory in Electron Microscopy (1, 3) Introduction to biological sample preparation for transmission and scanning electron microscopy. Tissue preparation, ultramicrotomy, operation of the electron microscope, darkroom procedures, particulate and molecular sample preparation, critical point drying, sputtercoating. Not open to students who have taken 405. (Lab. 6) Pre: graduate standing or permission of instructor. Hufnagel

513 Advanced Clinical Immunology See Medical Technology 513.

514 The Electron Microscope in Molecular and Cellular Biology (*Il*, 2) Use of the electron microscope to analyze structure and function of biological molecules. Applications in food science, pathology, pharmacology, ecology, gene engineering, and basic research. (*Lec. 2*) Pre: BCH 311 and BOT 352 or permission of instructor. In alternate years. Next offered spring 1996. Hufnagel

521 (or BOT 521 or ZOO 521) Recent Advances in Cell Biology (I, 2) Reading of current papers in the area of cell biology and preparation of written and oral reports. Emphasis on animal cells. (Lec. 2) Pre: at least one of the following courses or an equivalent course emphasizing cell structure and function—ZOO 327, 421, BOT 432, 445, 453, and MIC 408; graduate standing or permission of instructor. May be repeated for a maximum of 4 credits. Hufnagel

523 (or FSN 523 or NRS 523) Water Pollution Microbiology (1, 3) The microbiological aspects of water pollution, including the potential for infectious diseases, pollution effects on microbial ecosystems, and the microbial degradation of pollutants. (Lec. 3) Pre: 201 or 211, BCH 311, or permission of instructor. Credit or concurrent enrollment in 525. Traxler

525 (or FSN 525) Water Pollution Microbiology Laboratory (I, 1) Experimental method for pollution analysis, microbial indicator assay methods, microbial assays, sample collection and statistical treatment of data. (Lab. 3) Pre: concurrent enrollment in 523 or permission of instructor. Staff

533 Immunology (II, 3) Introduction to the cellular, molecular, and genetic basis of the immune system, and the role of the immune system in immunity to infection, tumor and transplantation immunobiology, and immunopathology. (Lec. 3) Pre: 201 or 211. Laux

534 Animal Virology

See Aquacultural Science and Pathology 534.

536 Virology Laboratory

See Aquacultural Science and Pathology 536.

538 Epidemiology of Viral and Rickettsial Diseases

See Aquacultural Science and Pathology 538.

552 (or BCH 552) Microbial Genetics (II, 3) Recent research on the mechanism of mutation, genetic recombination, the genetic code, transposons, regulations, genetic engineering and regulation of DNA, RNA, and protein synthesis in microbial systems. (Lec. 3) Pre: 201, BOT 352, and BCH 311. Cohen

561 Recent Advances in Molecular Cloning (I or II, 1) Reports of readings concerning the latest developments in techniques of molecular cloning and their applications in the study of various biological systems. (Lec. 1) Pre: 552 or permission of instructor. May be repeated. Nelson

571 Insect Microbiology See Entomology 571.

576 Marine Microbiology See Oceanography 576.

593, 594 The Literature of Bacteriology (I and II, 1 each) Thorough study of original literature of some phase of bacteriology. Written abstracts or papers on assigned topics are discussed in weekly conferences with instructor. (Independent Study) Staff

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

641 Physiology of Bacteria (II, 3) Bacterial structure and function, including growth; nutrition, environmental factors, metabolism, biosynthesis, and energy-yielding reactions. (Lec. 3) Pre: 413 and 415. In alternate years. Next offered 1995–96. Staff

654 Advances in Immunology (II, 2) Reports on assigned readings concerning latest developments in the field of cellular and humoral immunity presented and discussed by students. Research paper and critical review of a scientific paper required. (Lec. 2) Pre: 533, BCH 311, or permission of instructor. May be repeated for a maximum of 4 credits. In alternate years. Next offered 1995–96. Laux

656 Mechanisms of Bacterial Pathogenesis (1, 3) Study of recent research on the molecular mechanisms of pathogenesis. Students expected to participate in roundtable discussions of recent pertinent literature. (Lec. 3) Pre: 432, 552, and BCH 311. In alternate years. Next offered 1995–96. Staff

691, 692 Special Problems in Microbiology (I and II, 3 each) Assigned research on an advanced level. Student required to outline problem, conduct the necessary literature and experimental work, and present observations and conclusions in a report. (Independent Study) Pregraduate standing. Staff

695, 696 Graduate Research Seminar (I and II, 1 each) Reports of research in progress or completed. (Seminar) Required of all graduate students in microbiology. S/U credit. Staff

699 Doctoral Dissertation Research (*I and II*) Number of credits is determined each semester in consultation with the major professor or program committee. (*Independent Study*) S/U credit.

930 Workshop in Microbiology Topics for Teachers (I and II, 0-3 each) Especially designed for teachers of biology. Basic topics of microbiology from an advanced or pedagogical perspective. (Workshop) Staff

Note: For Virology, see Aquacultural Science and Pathology and Plant Sciences. For Mycology, see Botany.

Military Science (MSC) (Army ROTC)

Chairperson: Professor McGowan

000 Leadership Laboratory (I and II, 0) Handson, performance-oriented training such as rappelling, land navigation, and drill and ceremony, (Lab.) Required every semester for all ROTC cadets. Staff

101 Introduction to ROTC and the U.S. Army I (1, 1) Organization and role of ROTC and the U.S. Army. Customs and traditions, leadership dimensions, officer traits, and basic military skills. (Lec. 1) Concurrent enrollment in 000 required of all ROTC cadets. Torres

102 Introduction to ROTC and the U.S. Army II (II, 1) Branches of the Army, leadership, the U.S. Constitution, first aid, and general military skills. Expanding upon skills acquired in 101. (Lec. 1) Pre: 101. Concurrent enrollment in 000 required of all ROTC cadets. Torres

105 Beginner Weight Training and Conditioning (I, 1) See Physical Education 105. (Practicum) Required of all cadets enrolled in 301. Concurrent enrollment in 000 required of all ROTC cadets. Staff

201 History of Modern Warfare (1, 3) Study of warfare with emphasis on the period since the introduction of gunpowder. Influence of leaders, economics, and social systems on the outcomes of selected major battles. (Lec. 3) Concurrent enrollment in 000 required of all ROTC cadets. Kaley

202 Land Navigation and Military Skills (II, 3) Map reading, land navigation, terrain association, communications, first aid, and tactics. (Lec. 3) Concurrent enrollment in 000 required of all ROTC cadets. Moreno

205 Intermediate Weight Training and Conditioning (II, 1) See Physical Education 205. (Practicum) Required of all cadets enrolled in 302. Concurrent enrollment in 000 required of all ROTC cadets. Staff

301, 302 Leadership and Management I, II (I and II, 3 each) Advanced courses: application of the principles of war, small unit tactics, leadership development, planning and execution of tactical problems. (Lec. 3) Pre: concurrent enrollment in 105 for 301: 205 for 302. Concurrent enrollment in 000 required of all ROTC cadets. Morin or Kaley

401, 402 Organizational Management and Law I, II (I and II, 3 each) Advanced courses: military law, the profession of arms, obligations and responsibilities of an officer, Army readiness program, administrative management, world change and military implications, logistics, the military team, internal defense and development. (Lec. 3) Pre: 302 for 401; 401 for 402. Concurrent enrollment in 000 required of all ROTC cadets. Not for graduate credit. McGowan

403 Directed Study (I and II, 3) Experiential learning through field work in a military-type unit on an individual basis. Written analysis reguired on a topic selected by the chairperson. (Independent Study) Pre: 301, 302, and permission of chairperson. Not for araduate credit. McGowan

Music (MUS)

Chairperson: Professor R. Lee

101 Introduction to Music (I and II, 3) Fosters a better understanding and appreciation of the world's great music. Consideration of musical styles, techniques, and forms from the listener's standpoint. (Lec. 3) Staff (A)

106 History of Jazz (I and II, 3) The nature and origin of jazz and its development as an American folk idiom: European and African heritages, blues, ragtime, dixieland, boogie-woogie, swing, bop, cool, funky, gospel, jazz-rock, freeform, and progressive. (Lec. 3) Parillo and Pollart

110 Applied Music (I and II, 1-3) Private instruction in performance at the freshman level. One credit equals a half-hour lesson per week. Two or three credits equal an hour lesson per week and require additional preparation time, higher levels of performance, and recital performances.* (Studio) Pre: audition and permission of chairperson. May be repeated for credit. Staff

A Voice I Flute O Euphonium/ B Piano I Oboe **Baritone** C Organ K Clarinet R Tuba D Harpsichord L Bassoon S Percussion E Violin M Saxophone T Guitar F Viola N Trumpet **U** Harp O French Horn V Composition G Violoncello H Contra Bass P Trombone

111 Basic Musicianship (I and II, 3) Use of folk, classical, and popular music to learn essentials of music reading and music theory. (Lec. 3) Staff (A)

112 Intermediate Musicianship (II, 3) Continued use of folk, classical, and popular music to learn essentials of music reading and music theory, with emphasis on musical analysis, ear training, sightsinging, and part writing. (Lec. 3) Pre: 111 or permission of instructor. Not for major credit in music. Dempsey

121 Music Theory I (II, 2) Rhythmic, melodic, and harmonic elements of music. Scales, modes. intervals, rhythmic notation, and triads. Part writing, analysis, and keyboard work involving primary triads. (Lec. 1.5, Lab. 1) Pre: concurrent or previous keyboard experience. Staff

122 Ear Training and Sightsinging I (II, 2) Sightsinging in major and minor keys, including outlines of tonic and dominant harmonies. Rhythmic reading, aural recognition, with notation of material of 121. (Lec. 1.5, Lab. 1) Pre: 121. May be taken concurrently. Saladino

131 Introduction to the Music Profession (l. 3) Overview of the music profession. Development of an individualized plan for music study including articulation of learning and career goals, Introduction to skill areas including research and writing about music, basic musicianship, and appreciation of music literature, (Lec. 2, Lab. 2) Lee and Gibbs

169 Percussion Class (I and II, 1-2) Basic principles in performance and pedagogy of percussion instruments. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Next offered fall 1996, Pollart

170 Guitar Class (I and II, 1-2) Basic principles in performance and pedagogy of the guitar. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Next offered fall 1996. Salazar

171, 172 Piano Class I, II (I and II, 1 each) Development of basic techniques and musicianship for effective use of the piano in music classrooms. (Lab. 2) Pre: credit or concurrent enrollment in 121, 122 for 171; 171 for 172. Fuchs and Rankin

173 Voice Class (I and II, 1-2) Basic principles and pedagogy of singing, physiology, breathing, tone production, diction. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Next offered fall 1995. Staff

175 String Class (I and II, 1-2) Basic principles in performance and pedagogy of string instruments. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Next offered spring 1996. Dempsey

177 Woodwind Class (I and II, 1-2) Basic principles in performance and pedagogy of woodwind instruments. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Next offered spring 1996. Staff

179 Brass Class (I and II, 1-2) Basic principles in performance and pedagogy of brass instruments. (Lab. 2) Open to music majors and other students who demonstrate ability to read music. Offered every third semester. Next offered fall 1995. Smith

210 Applied Music (I and II, 1-3) Private instruction in performance at the sophomore level. One credit equals a half-hour lesson per week. Two or three credits equal an hour lesson per week and require additional preparation time, higher levels of performance, and recital performances.* (Studio) Pre: 110 or equivalent. See 110 for areas of study. May be repeated for credit. Staff

221, 222, 223 History of Music I, II, III (I, II, and I, 3 each) Historical development of classical and popular music in European and non-European cultures, 221: World music, Medieval and Renaissance eras. 222: Continuation, to include the Baroque, Classical, and Romantic eras. 223: Continuation, to include European, African-American, Hispanic, and other contributions to the classical and popular music of the twentieth century. (Lec. 3) Pre: 121 or equivalent competency for 221; 221 or consent of instructor for 222 and 223. Ladewig

225 Music Theory II (1, 2) Continuation of 121, covering all diatonic triads, dominant and supertonic seventh chords, and modulation to closely related keys. (Lec. 1.5, Lab. 1) Pre: 121 and 122. Gibbs

226 Ear Training and Sightsinging II (1, 2) Continuation of 122. Covering all diatonic triads, dominant and supertonic seventh chords, and modulation to closely related keys. (Lec. 1.5, Lab. 1) Pre: 122 and 225; 225 may be taken concurrently. Saladino

227 Music Theory III (II, 2) Advanced rhythmic, melodic, and harmonic practice approached through analysis, keyboard, and part writing, including original work. Covers seventh, ninth, eleventh, and thirteenth chords, chromatic alteration, chromatic progression, and foreign modulation. (Lec. 1.5, Lab. 1) Pre: 225 or equivalent. Gibbs

228 Ear Training and Sightsinging III (II, 2) Advanced rhythmic, melodic, and harmonic practice approached through sightsinging and dictation including computer-aided instruction. (Lec. 1.5, Lab. 1) Pre: 226 or equivalent. Gibbs

235 Introduction to Music Teaching (II, 3) Overview of music teaching in schools and studios. History, philosophy, curriculum, learning theory, and current topics in music teaching as they relate to the broader field of education. (Lec. 3) Pre: sophomore standing in music. Livingston

238 General Music Methods and Materials (II, 3) Teaching methods, instructional materials, and evaluation procedures for general music, grades K-12. Learner characteristics and development of children and adolescents. (Lec. 3) Pre: sophomore standing in music. Livingston

250 Music Convocation (I and II, 0) Study of repertory and techniques of concert presentation through attendance of student recitals and presentations by faculty and visiting artists. (Lab.) Attendance at 75 percent of events required. May be repeated. S/U credit. Dempsey

271, 272 Piano Class III, IV (I and II, 1 each) Further development of basic keyboard performance. Improvised accompaniments to folk songs. Sight transposition. Some score reading. Further development of reading skills using materials on the level of Bartok's Mikrokosmos, Books 2 and 3, and Clementi's Sonatinas, Op. 36. Registrants must also take any part of the piano proficiency examination not previously passed. (Lab. 2) Pre: 172 or equivalent for 271; 271 or equivalent for 272. Open only to music majors. Fuchs and Rankin

280 Mid-Program Portfolio in Music (I and II, 0) Individual accomplishment of activities and experiences, demonstrating interest and competency in music at the midpoint in the student's program of studies as a music major. (Portfolio) Pre: sophomore standing in music. Staff

283 Vocal Diction (II, 3) Basic phonetics (International Phonetic Alphabet). Enunciation in the foreign languages most frequently encountered in vocal and choral literature (Italian, French, German, and Latin). English diction in singing. In alternate years. Next offered spring 1997. Staff

291 University Marching Band (1, 0-2) Rehearsal and performance of music, drill, and shows for URI football games. (Rehearsal 8) May be repeated for credit. S/U only for 0 credit. Smith

292 Concert Band (II, 0-1) Study and performance of concert band music. Open to all students. (Rehearsal 3) May be repeated for credit. S/U only for 0 credit. Smith

293 University Chorus (I and II, 0-1) (Rehearsal 3) May be repeated for credit. S/U only for 0 credit. Saladino

294 Symphonic Wind Ensemble (I and II, 0-1) (Rehearsal 3) Pre: audition. May be repeated for credit. S/U only for 0 credit. Pollart

295 Concert Chorus (I and II, 0-1) (Rehearsal 3) Pre: audition. May be repeated for credit. S/U only for 0 credit. Saladino

296 Jazz Studio Ensemble (I and II, 0-1) Performance and study of jazz and studio music as related to professional experience. (Rehearsal 3) Pre: audition. S/U only for 0 credit. Parillo

297 University Symphony Orchestra (I and II, 0-1) Study and performance of standard and modern repertoire for the orchestra. (Rehearsal 3) Pre: audition. May be repeated for credit. S/U only for 0 credit. Staff

310 Applied Music (I and II, 2-4) Private instruction in performance at junior level. Two, three, or four credits equal an hour lesson per week. More credit requires additional preparation time, higher levels of performance, and recital performances.* (Studio) Pre: 210 or equivalent. See 110 for areas of study. May be repeated for credit. Staff

311 Basic Conducting (1, 2) A course in elementary conducting techniques including baton techniques and score study as well as the organization of instrumental and choral rehearsals. Pre: credit or concurrent enrollment in 225 and 226. Saladino

312 Advanced Conducting (II, 3) A study of problems and approaches to instrumental and choral conducting based on advanced baton techniques. Principles of interpretation and the art of communication through practical experience with departmental organizations. Pre: 311. Pollart

317 Form and Analysis (1, 3) Critical study of the structure of tonal music. Works of various composers are analyzed with reference to motive and phrase as generative elements in design. (Lec. 3) Pre: 227 or equivalent. In alternate vears. Next offered fall 1996. Gibbs

321 Instrumentation and Choral Arranging (II, 3) Range, timbre, transpositions, and other characteristics of instruments, singly and in combination. Elements of choral arranging. Exercises with attention to part writing, harmony, and form. Setting of a small piece of music for orchestra, band, or chorus required. Pre: credit

^{*} Supplementary fee required for all areas of applied music except composition: \$95 for 1 credit; \$190 for 2, 3, or 4 credits.

- or concurrent enrollment in 227 or equivalent. In alternate years. Next offered spring 1996. Gibbs
- 323 Jazz Theory and Improvisation (1, 3) An intensive study and practice of the formal elements of jazz improvisation. (Lec. 1, Lab. 4) Pre: 225, 226 and acceptance into 210. In alternate years. Next offered fall 1995. Parillo
- 329 (or EDC 329) Music for the Elementary School Teacher (II, 3) Fundamentals of music and methods employed in teaching music and making it a more meaningful and integral part of the curriculum in the elementary school. (Lec. 3) Open only to elementary and early childhood education majors. Livingston
- 339 Choral Methods and Materials (1, 3) Organization and administration of choral music programs in elementary and secondary schools, focusing on materials, procedures, policies, and teaching methods. (Lec. 3) Pre: EDC 250 and piano proficiency examination. Livingston
- 340 Instrumental Methods and Materials (II, 3) Organization and administration of the instrumental music program in elementary and secondary schools, focusing on materials, procedures, policies, and teaching methods. (Lec. 3) Pre: EDC 250, Smith
- 350 Junior Recital (I and II, 0) Performance of a public program at least 20 minutes in duration after faculty examination. (Studio) Pre: concurrent enrollment in 310. Staff
- 371 Piano Accompanying (I and II, 1) Development of sight-reading skills. Preparation and performance of accompaniments. (Lec. 1) Pre: permission of piano faculty. May be repeated. Rankin
- 399 Chamber Music Ensembles (I and II, 0-1) Chamber music ensembles are designated as K Keyboard Ensemble, S String Ensemble, W Woodwind Ensemble, B Brass Ensemble, P Percussion Ensemble, V Vocal Ensemble, G Guitar Ensemble, I Jazz Ensemble, M Mixed Ensemble, O Opera Workshop. Small instrumental ensembles are normally restricted to one performer per part. (Rehearsal 2) Pre: audition. May be repeated for credit. Staff
- 407 The Symphony (I and II, 3) Survey of the development of the symphony from its beginnings in the mid-eighteenth century to the present. Includes a study of the evolution of the orchestra and the sonata form and considers cultural influences exerted upon the composers. (Lec. 3) Pre: 222. Offered every seventh semester. Next offered fall 1996. Ladewig

- 408 The Opera (I and II. 3) History of opera from its beginnings in Italy in the seventeenth century to the present, including works by composers such as Monteverdi, Purcell, Mozart, Wagner, Verdi, and Puccini. Pre: credit or concurrent enrollment in 222 or the ability to read music. Offered every seventh semester. Next offered fall 1998, Ladewig
- 410 Applied Music (I and II, 2-4) Private instruction in performance at the senior level. Two, three, or four credits equal an hour lesson per week. More credit requires additional preparation time, higher levels of performance, and recital performances.* (Studio) Pre: 310 or equivalent. See 110 for areas of study. May be repeated for credit. Staff
- 420 Eighteenth-Century Counterpoint (II, 3) Tonal polyphony in the style of J.S. Bach. Includes creative exercises in writing counterpoint in Baroque style and the study of representative compositions such as the inventions and fugues of Bach. (Lec. 3) Pre: 227 and 228. In alternate years. Next offered spring 1996, Rankin
- 421 Electronic and Computer Music Research (1, 3) Study and application of technology for music research in music education, theory/composition, music history, and performance, culminating in a major project in the student's area of specialization. (Lec. 2, Lab. 2) Pre: 235 or equivalent. In alternate years. Next offered fall 1995. Gibbs and Livingston
- 424 Jazz Composition and Arranging (1, 3) Modern and traditional jazz arranging and compositional techniques, with emphasis on solo and concerted ensemble writing, voicing techniques, and mechanics of line writing; unique composing styles of recognized jazz composers. (Lec. 3) Pre: 227, 228. In alternate years. Next offered fall 1996, Parillo
- 430 The Renaissance Era (I and II, 3) Music at European courts and cathedrals (1400-1600), including vocal Masses, motets, madrigals, and chansons, and instrumental canzonas, ricercars, toccatas, and variations of Dufay, Josquin, Palestrina, Gabrieli et al. (Lec. 3) Pre: 221 or the ability to read music. Offered every seventh semester. Next offered spring 1996. Ladewig
- 431 The Baroque Era (I and II, 3) Music of the so-called thorough-bass period (ca. 1600-1750), including the emergence of opera and oratorio, autonomous instrumental music, and the concerto style, culminating in works of Bach and Handel. (Lec. 3) Pre: 222 or the ability to read music. Offered every seventh semester. Next offered spring 1997. Ladewig

- 432 The Classic Era (I and II, 3) Music of the period (ca. 1725-1815) beginning with the decorative gallant style of the Rococo composers and culminating in the expressive architectonic textures in the works of Haydn, Mozart, and early Beethoven. (Lec. 3) Pre: 222. Offered every seventh semester. Next offered spring 1998. Ladewig
- 433 The Romantic Era (I and II, 3) Music of the nineteenth century within the context of the Romantic movement (ca. 1815-1875). Major composers and their works in various media are considered in relation to their historical significance. (Lec. 3) Pre: 222 or the obility to read music. Offered every seventh semester. Next offered fall 1995. Ladewig
- 434 The Modern Era (I and II, 3) Music of the modern era, with emphasis on changing aesthetics as revealed through the analysis of selected compositions. (Lec. 3) Pre: 227 or the ability to reod music. Offered every seventh semester. Next offered fall 1997, Gibbs
- 442 Directed Study in Applied Music Pedagogy (I and II, 2) Research in materials and approaches for studio teaching. Pre: 4 credits in 210. In alternate years. Next offered fall 1996. Rankin
- 450 Senior Recital (I or II, 0) Performance of a public program at least 20 minutes in duration after faculty examination. Pre: concurrent enrollment in 410. Staff
- 470 Special Topics in Music (II, 1-3) Exploration of advanced topics not covered by the standard curriculum but of interest to faculty and students in a particular semester. Topics in performance, music history, music theory or composition, music education. May be repeated for credit with a different topic. In alternate years. Next offered spring 1997. Gibbs
- 480 Graduation Portfolio in Music (I and II, 0-2) Individual accomplishment of activities and experiences demonstrating competence as a music professional. Achievement of entry-level professional behaviors indicating potential success as a music major graduate. (Portfolio) Pre: senior standing in music. Staff
- 490 Independent Study (I and II, 1-3) Preparation of a project under the guidance of a member of the appropriate faculty. (Independent Study) Pre: acceptance by faculty member who will be the project advisor and approval of chairperson. May be repeated for credit. Staff
- 510 Applied Music (1 and II, 2, 3, 4, or 6) Private instruction. One 60-minute lesson each week.* Levels, master classes, and recital perfor-

mance as prescribed in the applied music syllabi. (Studio 60 minutes) Pre: audition demonstrating proficiency appropriate to the selected M.M. degree. See 110 for areas of study. May be repeated. Staff

- 511 Advanced Choral Conducting (1, 3) Critical study of choral music scores with reference to interpretation and performance. Development of technical command and expressive skills includes supervised rehearsal and conducting of University ensembles. (Lec. 3) Pre: knowledge of conducting technique as evidenced in audition or 311. Saladino
- 512 Advanced Instrumental Conducting (II, 3) Critical study of orchestral and chamber music scores with reference to interpretation and performance. Development of technical command and expressive skill includes supervised rehearsal and conducting of University ensembles. (Lec. 3) Pre: knowledge of basic baton as evidenced in audition or credit in 312. Staff
- 513 Graduate Conducting Project (I and II, 3) Preparation and conducting of a program of chamber music and/or a major ensemble with documentation. (Studio 3) Pre: 511, 512, and 548 and permission of chairperson. Staff
- 540 Foundations of Music Education (I and II, 3) Examination of the broad influences upon music education. Historical, philosophical, sociological, psychological, and curricular foundations. (Lec. 3) Pre: graduate standing in music. Offered every third semester. Next offered fall 1995. Pollart
- 545 Musical Learning, Evaluation and Assessment (I and II, 3) A study of cognitive, psychomotor, and affective learning in music. The ways in which musical learning may be evaluated and assessed. The needs of special populations will be included. (Lec. 3) Pre: graduate standing in music. Offered every third semester. Next offered spring 1996. Lee
- 548 Research in Music (I and II, 3) Study of research techniques as applied to the art of music. Major project procedures and data collection and examination in the following research categories: historical, philosophical, and empirical. (Lec. 3) Pre: graduate standing in music. Offered every third semester. Next offered fall 1996. Livingston
- 550 Graduate Performance Recital (I and II, 0) Performance of advanced repertoire of various styles in a public program at least 55 minutes in duration for the M.M. in performance and 45 minutes in duration for the M.M. in music education after faculty acceptance. (Studio) Pre: con-

current enrollment in 510 and 6 or more credits in 510 for the M.M. in performance or 4 or more credits in 510 for the M.M. in music education.

- 552 Graduate Composition Recital (I and II, 0) A juried recital of at least 40 minutes of original compositions prepared by the composer. (Studio) Pre: concurrent enrollment in 510V and 3 or more credits in 510V. Gibbs
- 567 Seminar in Performance and Pedagogy (1, 2) Study of performance literature, practice, and pedagogy. Research projects and supervised teaching experience appropriate to the major performance area. (Lec. 2) Pre: concurrent enrollment in 551 or 561. In alternate years. Next offered fall 1996, Rankin
- 570 Graduate Project (I and II, 3) Independent study resulting in a major essay, composition, or orchestration. (Independent Study) Pre: 548 and permission of chairperson. Staff
- 571 Special Topics in Music (II, 1-3) Exploration of advanced topics not covered by the standard curriculum but of interest to faculty and students in a particular semester. Topics in performance, music history, music theory and composition, and music education. (Lec. 1-3) May be repeated for credit with a different topic. In alternate years. Next offered spring 1997. Gibbs
- 579 Experiential Learning in Music (1 or 11, 2) Developing competence through an individual and/or collaborative experiential activity involving music research, performance, service, and/ or teaching in university and community settings. May include professional music studio or computer lab work. Student will work with his or her major professor or with the director of graduate studies. (Practicum) Pre: graduate standing and previous or concurrent enrollment in 580. Staff
- 580 Master of Music Portfolio I (I or II, 0) Planning individual activities and experiences demonstrating competence at the graduate level in music. Should be taken in the first semester of matriculation. Student will work with his or her major professor or with the director of graduate studies, (3 common Seminars) Pre: graduate standing in music. Staff
- 581 Master of Music Portfolio II (1 or 11, 1) Individual accomplishment of activities and experiences demonstrating competence at the graduate level of music. Achievement of professional behaviors indicating significant growth in areas of specialization. Oral presentation required. Should be taken in final semester of

study. Student will work with his or her major professor or with the director of graduate studies. (3 common Seminars) Pre: graduate standing in music. Staff

- 583 Vocal Diction (II, 3) Phonetics (International Phonetic Alphabet). Enunciation in the foreign languages most encountered in vocal literature (French, Italian, and German). English diction in singing. (Lec. 3) In alternate years. Next offered spring 1997. Staff
- 590 Piano Accompanying (I and II, 1) Development of sightreading skills. Preparation and performance of accompaniments of major works. (Studio 1) Pre: permission of piano faculty. May be repeated for a maximum of 3 credits. Rankin
- 593 University Chorus (I and II, 0-1) (Rehearsal 3) Pre: audition at graduate level of performance. May be repeated. Saladino
- 594 Symphonic Wind Ensemble (I and II, 0-1) (Rehearsal 3) Pre: audition at graduate level of performance. Pollart
- **595 Concert Choir** (I and II, 0–1) (Rehearsal 3) Pre: audition at graduate level of performance. Saladino
- 596 Jazz and Studio Ensemble (1 and 11, 0-1) Study and performance of jazz and studio music, with leadership roles in improvisation and performance. (Rehearsal 3) Pre: audition at graduate level of performance. Parillo
- 597 University Symphony (I and II, 0-1) (Rehearsal 3) Pre: audition at graduate level of performance. May be repeated. Staff
- 598 Chamber Music Ensemble (I and II, 0-1) Chamber music ensembles are designated as K Keyboard Ensemble, S String Ensemble, W Woodwind Ensemble, B Brass Ensemble, P Percussion Ensemble, V Vocal Ensemble, G Guitar Ensemble, | Jazz Ensemble, M Mixed Ensemble, O Opera Workshop. Select appropriate letter and small ensemble from the list and add to course number, as 598S String Ensemble. Other ensemble combinations may be added. Small instrumental ensembles are normally restricted to one performer per part. (Rehearsal 2) Pre: graduate standing in music and evidence by audition of graduate-level performance. May be repeated. Staff
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or pro-

^{*} Supplementary fee required for all areas of applied music except composition: \$95 for 1 credit; \$190 for 2, 3, 4, or 6 credits.

gram committee. (Independent Study) Pre: 548. May be repeated. S/U credit. Staff

Natural Resources Science (NRS)

Chairperson: Professor W. Wright

- 100 Natural Resource Conservation (1, 3) Introduction to man's use and management of natural resources: land, food, forest, wildlife, water, minerals, and air, with a survey of contemporary resource-use problems in environmental pollution, (Lec. 3) Husband (S)
- 212 Introduction to Soil Science (II, 3) Physical, biological, and chemical properties of soils and their practical application to environmental science. Introduction to soil genesis, classification, and land-use and conservation issues. (Lec. 3) Amador (N)
- 286 Analysis and Presentation of Environmental Data (II, 2) The scientific method, summarizing and reporting of numerical data, unique properties of environmental data, method of unit conversion, graphic visualization of environmental data. (Lec. 1, Lab. 2) Pre: 100 and 212, or permission of instructor. Open to natural resources science majors only. August
- 300 Seminar in Natural Resources (1, 1) Review and discussion of research and current topics in natural resources. (Seminar) Pre: 100 and 212. S/U credit. Husband
- 301 Introduction to Forest Science (I, 3) Development and importance of forestry; forest regions; tree characteristics and identification with emphasis on Northeastern species; forest environment; tree growth and site productivity. (Lec. 2, Lab. 2) Pre: BOT 111. Brown
- 302 Fundamentals of Forest Management (II, 3) Wood properties, timber harvesting, measurement and utilization of forest products; establishment, tending, and protection of forest stands; silvicultural systems; forest inventory procedures and management plans. (Lec. 2, Lab. 2) Pre: 301. Brown .
- 304 Field Ornithology (II, 3) Identification, field study techniques, habitats, and basic biology of birds. Emphasis on field identification of local species. (Lec. 1, Lab. 4) Pre: ZOO 111. In alternate years. Next offered spring 1996. Staff
- 305 Principles of Wildlife Management (1, 3) Introduction to wildlife management. Typical forest and farm game species. Forest and farm habitats analyzed, management principles emphasized. (Lec. 3) Pre: BOT 111, ZOO 111, and ZOO (or BOT) 262. Wallace

- 309 Wildlife Management Techniques Laboratory (II, 2) Application of practical field techniques for quantification and evaluation of wildlife and habitats. Methods of field identification. sampling, and data analysis. (Lab. 4) Pre: 100 and concurrent enrollment in 305, or permission of instructor, Wallace
- 312 Methods in Soil and Water Analysis (1, 4) Principles and exercises in the collection, analysis, and interpretation of soil and water data. Sampling and experimental design, chemical analysis techniques, data processing, and spatial analysis, (Lec. 3, Lab. 2) Pre: 212 and CHM 101 or 103 or permission of instructor. Amador
- 324 Biology of Mammals (II, 3) Classification, distribution, field study techniques, and basic biology of mammals. Emphasis on New England species. (Lec. 2, Lab. 3) Pre: ZOO 111. In alternate years. Next offered in 1996. Husband
- 351 Soil Morphology Practicum (I, 1) Six weeks of practical experience in the description of soil profiles under field conditions. Field trips to observe, describe, and interpret morphological properties as utilized in soil judging. (Practicum) Pre: 212 or permission of instructor. May be repeated for credit with permission of chairperson. Staff
- 399 Natural Resources Internship (I, II, and SS, 1-6) Supervised work experience in forestry, wildlife management, soil science, water resources, environmental education, or related areas of natural resources management. (Practicum) Pre: 100, 212, and approval of chairperson. Open only to natural resources science majors. May be repeated for a maximum of 6 credits. S/U credit. Staff
- 402 Wildlife Biometrics (1, 3) Presentation of statistical design and analysis of ecological field measurements. Emphasis on quantitative measurements and data analyses used in wildlife population research. (Lec. 2, Lab. 3) Pre: ZOO (or BOT) 262 and STA 308 or 409 or permission of instructor. Husband
- 406 Wetland Wildlife (1, 3) Introduction to management of wetland wildlife, Emphasis on management techniques used for major wetland types, waterfowl, furbearers, and nongame wildlife. (Lec. 2, Lab. 2) Pre: ZOO (or BOT) 262 or permission of instructor. Staff
- 407 Nongame and Endangered Species Management (1, 3) Management programs for nonhunted species, basic conservation biology, and techniques used for management of endangered species. (Lec. 3) Pre: 305 or concurrent enrollment in 305. In alternate years. Staff

- 409 Concepts in GIS (1, 3) Discussion of the unique properties of spatial data, GIS data structures, accessing existing spatial data, and applications of GIS in the environmental sciences. (Lec. 3) Pre: ZOO (or BOT) 262 or permission of instructor. Not for graduate credit. August
- 410 Fundamentals of GIS (1, 3) Emphasis on using a geographic information system (GIS) to create a geographically referenced spatial database, spatial topology, data visualization, computer-assisted map making, and spatial data query and analysis. (Lab. 6) Pre: past or simultaneous enrollment in 409 or 509. August
- 412 Soil-Water Chemistry (II, 3) Chemodynamics of soil-water interactions. Emphasis on properties and processes which determine the behavior and distribution of chemical contaminants in soils and sediments. (Lec. 2, Lab. 3) Pre: 212 and CHM 124, 126, or permission of instructor. Staff
- 423 Wetland Ecology (I, 4) Origin, development, and characteristics of inland and tidal wetlands. Topics include geology, hydrology, soils, plant ecology, succession. Wetlands of North America and the world, with emphasis on the glaciated Northeast. (Lec. 2, Lab. 4) Pre: ZOO (or BOT) 262 and GEL 103 or 105, or permission of instructor, Golet
- 424 Wetlands and Land Use (II, 4) Survey of wetland values, exploitation, current status, and legal protection. Emphasis on critical issues including wetland evaluation, impact assessment, mitigation procedures. Field trips provide examples of wetland use conflicts. (Lec. 2, Lab. 4) Pre: 423 or permission of instructor. Golet
- 450 Soil Conservation and Land Use (1, 3) Application of soil survey interpretation as a tool in soil and water conservation and land use planning. Implications of soil properties and problems for land use considered with emphasis on urbanizing situations. (Lec. 3) Pre: 212 or permission of instructor. Gorres
- 451 Soil and Water Conservation Technology (1, 3) Principles and practices involved in mechanical protection, improvement, and development of soil and water resources. Design of conservation features and structures. (Lec. 2, Lab. 3) Pre: MTH 111 or equivalent. Staff
- 461 Hydrology and Water Management (1, 4) Study of the processes that govern the hydrology and quality of surface runoff and groundwater. Emphasis on watershed management and the impact of land use on water quality. (Lec. 3, Lab. 2) Pre: 212 or permission of instructor. Gorres

471 Soil Morphology and Mapping (1, 3) A detailed study of the morphological properties of soils and their distribution on the landscape. Practical experience in describing soil profiles and preparing soil maps. (Lec. 1, Lab. 4) Pre: 212 or permission of instructor. Wright

475 Plant Nutrition and Soil Fertility See Plant Sciences 475.

491, 492 Special Projects (I and II, 1-3 each) Special work to meet the needs of individual students in natural resources. (Independent Study) Pre: permission of chairperson. Staff

498 Teaching Practicum in Natural Resources Science (I and II, 1-3) Teaching experience for qualified undergraduates through actual involvement in planning and assisting in natural resources science courses. May include supervised participation in a discussion group, assisting in a laboratory or field course, or tutoring. (Practicum) Pre: senior standing, previous enrollment in the course to be taught, and permission of instructor. Limited to natural resources science majors. May be repeated for a maximum of 3 credits. Not for graduate credit. Staff

500 Graduate Seminar in Natural Resources (II, 1) Presentation of research reports and discussion of current topics in natural resources. Critique of research methodology and scientific literature. (Seminar) Pre: graduate standing. Attendance is required of all graduate students in residence, but no more than 2 credits may be taken for program credit. S/U credit. Staff

505 Biology and Management of Migratory Birds (1, 2) Current programs, problems, and techniques for managing migratory game and nongame birds. Emphasis on basic biology of the species, habitat management, and harvest management. (Seminar) Pre: 305 or permission of instructor. In alternate years. Next offered 1995-96. Staff

509 Concepts of GIS and Applications in Environmental Science (1, 3) Unique properties of spatial data, geographic information system (GIS) data structures, accessing existing spatial data, and applications of GIS in the environmental sciences. Uses in ecology, conservation, soil science, geohydrology, and wildlife management. (Lec. 3) Pre: ZOO (or BOT) 262 or permission of instructor. August

510 Soil-Water Relations (II, 3) Processes governing water flow and availability in unsaturated and saturated soil. Emphasis on soil-water-plant relationships with applications to watershed management and hydrology. (Lec. 2, Lab. 3) Pre: 212, 461, or permission of instructor. Gold

514 Fate of Organic Chemicals in Soils and Sediments (II, 3) Physical and chemical processes which determine contaminant distribution in soils and sediments, along with mechanistic conceptual models of these processes. Soil-water-contaminant relationships are emphasized. (Lec. 3) Pre: one semester of organic chemistry and permission of instructor. Staff

522 Advanced GIS Analysis of Environmental Data (II, 3) Discussion and application of terrain modeling, spatial statistics, proximity analysis, remote sensing/GIS linkages, and environmental data integration. Emphasis on ecological data at watershed/landscape scales. (Lec. 1, Lab. 6) Pre: 410 or permission of instructor. August

523 Water Pollution Microbiology See Microbiology 523.

526 Microbial Ecology of Soils and Sediments (i, 3) Occurrence and activity of microorganisms in soils and sediments, including wetlands. Environmental physiology of microbes; habitat interactions; methods of study; importance of microbial processes to ecosystem productivity, pollutant degradation, and atmospheric chemistry. (Lec. 3) Pre: 212, MIC 211, or permission of instructor. Amador

532 Conservation Biology (*II*, 2) Examination of the different components of conservation of biological diversity. Topics include genetics of small populations, minimum viable population sizes, captive propagation reintroduction ecology, and causes of extinction. (Lec. 2) Pre: ZOO (or BOT) 262 or permission of instructor. In alternate years. Next offered spring 1996. August

534 Ecology of Fragmented Landscapes (II, 2) Presentation of the concepts of landscape ecology with emphasis on populations of plants and animals in fragmented habitats. Topics discussed include: habitat corridors, fluxes of energy and species along habitat edges, shape analysis, and stability of populations in habitat patches. (Lec. 2) Pre: ZOO (or BOT) 262 or permission of instructor. In alternate years. Next offered spring 1997. August

555 Applied Coastal Ecology (1, 2) Resource management problems in coastal national parks. Topics include air and water pollution, barrier island erosion, deer overpopulation, Lyme disease, and ecosystem restoration. Examples of conflicting land-management mandates and research needs discussed. Optional field trips. (Lec. 2) Pre: advanced course work or experience in topical fields or permission of instructor. Offered in even-numbered years. Buckley, Ginsberg, and Roman

567 Soil Genesis and Classification (II, 3) Development of soils as influenced by physical, chemical, biological, and climatic factors. Processes of soil formation presented relative to soil taxonomy and geographic distribution. (Lec. 3) Pre: 471 or permission of instructor. Wright

568 Recent Advances in Natural Resources Science (1, 3) Critical analysis and presentation of technical reports on recent advances in natural resources science. Topics will vary according to instructor and background of students. (Lec. 3) Pre: graduate standing or permission of instructor. In alternate years. Next offered 1995-96.

582 Seminar in Soil Ecology and Biochemistry (II, 1) Discussion of current topics in special areas of soil ecology and biochemistry based on primary scientific literature. (Lec. 1) Pre: senior or graduate standing, 212, and permission of instructor. Amador

591, 592 Special Problems (*I and II, 1–3 each*) Advanced independent research projects supervised by members of the research staff and unrelated to thesis research. Projects developed to meet individual needs. (Independent Study) Pre: permission of chairperson. Staff

599 Master's Thesis Research I, II (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

699 Doctoral Dissertation Research I, II (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

New England Studies (NES)

Coordinator: Associate Professor Schoonover

200 New England (I or II, 3) Introduction to the study and interpretation of New England culture through the social and natural sciences, humanities, and arts. Field work. (Lec. 3) Staff (L)

300 The New England Experience (1 or 11, 3) Life in New England, past and present, through varying disciplines focusing on a new topic each semester. (Lec. 3) May be repeated for credit with different emphasis. Staff

400 Special Topics in New England Studies (I or II, 1-3) Specialized topics in the study of New England offered by specialists in the field. (Seminar) May be repeated for credit with different topics. Staff

Nursing (NUR)

Interim Dean: Associate Professor Joseph

- 103 (100) Professional Practice in Health and Illness (I and II, 3) Introduction to the concept of professional helping including problem management, communication, the teaching process, and critical decision making. Analysis of ecosystem influences and cultural variability in health, illness, and health care. (Lec. 2, Lab. 3) Staff
- 150 Human Sexuality (I and II, 3) Interdisciplinary approach to the study of individual and societal determinants in the development, integration, and expression of human sexuality and a code of sexual behavior. (Lec. 3) Hirsch and Staff (S)
- 203 Comprehensive Health Assessment (I and II, 3) Introduces the techniques of history taking and systematic health assessment of individuals across the life span. Recognition of normal findings is emphasized. (Lec. 2, Lab. 3) Pre: ZOO 242 and 244; NUR 103. Staff
- 210 Pathophysiology I (I and II, 3) Body systems approach to the examination of etiology, pathogenesis, and clinical manifestations underlying alterations in health across the life span. Focus on medical diagnostics and therapy for common health problems. (Lec. 3) Pre: 103, MIC 201, ZOO 242, credit or concurrent enrollment in PCL 225 or 226. Staff
- 212 Pathophysiology II (I and II, 3) Continuation of 210. (Lec. 3) Pre: 210. Staff
- 223 (250) Nursing in Health Promotion (I and II, 3) Examination of health promotion in a nursing context. Emphasis on macro- and microlevel health promotion strategies applicable to nursing practice with individuals, families, and communities. (Lec. 3) Pre: PSY 232, NUR 203. Staff
- 224 (255) Practicum in Health Promotion Nursing (I and II, 3) Application of health promotion principles and nursing strategies to clients of all ages, to families, and to communities. Emphasis on utilization of the nursing process in selected clinical situations. (Practicum) Pre: credit or concurrent enrollment in 223. Staff
- 246 Conceptual Bases of Professional Nursing (I or II, 3) Overview and synthesis of concepts essential to development of the professional nursing role. Primary emphasis on expanding and refining the theoretical bases for decision making and nursing strategies in client care. (Lec. 3) For R.N. students only. Martins

- 270 Scientific Inquiry in the Practice of Nursing (I or II, 3) Introduction to principles of scientific inquiry and the research process, including identification of forms of analytical thinking common to problem solving in nursing. Opportunity for evaluating and utilizing research findings. (Lec. 3) Pre: STA 220, credit or concurrent enrollment in 224 or 235. Staff
- 300 Theories and Issues in Professional Role Development (I and II, 3) Examination of theories, issues, and concepts related to nursing science and professionalism. Emphasis on ethical. moral, and legal conduct, with responsibilities to self, peers, the profession, and society. (Lec. 3) Pre: junior standing. Staff
- 346 Practicum in Care of Clients and Families (I or II, 3) Application of health promotion and restoration principles and corresponding nursing strategies for clients and families in a variety of clinical settings. (Practicum) Pre: 210, 212, 246, 270, and completion of ACT-PEP tests, 457, 503, 530, and 554 or equivalent courses. For R.N. students only. Staff
- 349 Aging and Health (II, 3) Examines normal age changes, effects on health, health problems, and interventions to achieve optimal wellness. Utilizes a systems perspective emphasizing healthy, positive aging and incorporates an interdisciplinary approach to care. (Lec. 3) Burbank
- 350 General Methods and Strategies in Nursing Practice II (I and II, 3) General nursing strategies applicable to individual nursing care. Emphasis on theoretical and scientific bases of nursing strategies for specific patient-care problems. (Lec. 3) Pre: 235, credit or concurrent enrollment in 212. Staff
- 355 Practicum in General Nursing Strategies II (I and II, 3) General nursing strategies applicable to individual nursing care. Emphasis on theoretical and scientific bases of nursing strategies for individuals with a variety of health problems. (Practicum) Pre: 255, credit or concurrent enrollment in 350. Staff
- 360 Impact of Death on Behavior (1 and 11, 3) Seminar to explore the human experience of dying and the issue of quality of life. Group discussion focuses on the effect that individual and social values and medical and social structures have on one's grief response and bereavement process. (Lec. 3) Staff (L)
- 370 Nursing in Short-Term Health Care (I and II, 3) Study of health care phenomena frequently associated with short-term illnesses as a conceptual base for analysis and development of

- nursing care strategies across the life span. (Lec. 3) Pre: 270 and 355. Staff
- 375 Practicum in Short-Term Care of Adults (/ and II, 3) Application of the nursing process to adults of all ages in short-term health care settings with an emphasis on developing nursing strategies specifically devoted to the restoration of health. (Practicum) Pre: PCL 225 and 226 and credit or concurrent enrollment in 370 Staff
- 390 Directed Study (I and II, 1-3) Research study or individual scholarly project relating to the nursing major. Faculty guidance in problem delineation and in development, implementation, and evaluation of the project. (Independent Study) Pre: admission to the College of Nursing. S/U credit. Staff
- 410 Psychopathology (I and II, 2) Examination of etiology, pathogenesis, and clinical manifestations underlying alterations in mental health across the life span, focusing on psychiatric diagnostics and therapies for common mental illnesses. (Lec. 2) Pre: 355. Not for graduate credit.
- 415 Practicum in Mental Health and Psychiatric Nursing (I and II, 3) Application of the nursing process and the use of self as the therapeutic agent with individuals and groups of clients. Emphasis on developing nursing strategies for mental health care. (Practicum) Pre: credit or concurrent enrollment in 410. Not for graduate credit.
- 420 Family Health Nursing (I and II, 3) Analysis of the family as the unit of service, with application of the nursing process in a family-centered context. Includes consideration of healthy and troubled families and their nursing care needs. (Lec. 3) Pre: 375 and 415. Not for graduate credit. Viau and Staff
- 425 Practicum in Family Health Nursing (I and II, 2) Clinical practice with the family as the unit of service. Application of family health nursing concepts with selected child-bearing and childrearing families. (Practicum) Pre: credit or concurrent enrollment in 420. Not for graduate credit. Staff
- 430 Community Health Nursing (I and II, 3) Analysis of community as a unit of service for nursing. Application of nursing process to groups, population groups, organizations, and communities. Examination of epidemiological, financial, organizational, and occupational perspectives. (Lec. 3) Pre: 375 and 415. Pre (for R.N. students only): 210, 212, 246, 270, and completion of ACT-PEP tests, 457, 503, 530, and 554. Not for graduate credit. Staff

- 435 Practicum in Community Health Nursing (I and II, 3) Application of the nursing process to communities. Experience(s) with multi-problem families and groups and/or organizations. Indepth analysis of a selected community, including utilization of epidemiological process. (Practicum) Pre: credit or concurrent enrollment in 430. Staff
- 445 Practicum in Nursing of Children (I and II, 3) Application of the nursing process to children in short-term and long-term health care settings with an emphasis on developing nursing strategies specifically appropriate for the nursing of children. (Practicum) Pre: 425, credit or concurrent enrollment in 450. Not for graduate credit. Staff
- 446 Clinical Directed Study for Registered Nurse Students (I and II, 1-4) Clinical study or individual scholarly project related to the nursing major. Faculty guidance in problem delineation and in development, implementation, and evaluation of the project. (Independent Study) Pre: 346 and permission of instructor. Not for graduate credit. Staff
- 450 Nursing in Long-Term Health Care (I and II, 3) Study of nursing care problems associated with chronic illness and nursing management of clients in various long-term health care settings. Emphasis on theoretical analysis of strategies applicable to long-term care. (Lec. 3) Pre: 425 and 435. Not for graduate credit. Staff
- 455 Practicum in Long-Term Care of Adults (I and II, 4) Application of the nursing process with adult clients in various long-term health care phases and settings. Emphasis on developing nursing care strategies, including case management for chronically ill clients. (Practicum) Pre: credit or concurrent enrollment in 450. Not for graduate credit. Staff
- 459 Perspectives on Male and Female Sexuality (1 or 11, 3) Examination of the multifaceted perspectives (somatic, emotional, ethical, cultural) on male and female sexuality. Topics include history and recent developments in sexology research, therapy, role and gender issues. (Lec. 3) Pre: 150 or permission of instructor. Hirsch and Dannenfelser
- 501 Theoretical Study of Phenomena in Nursing (1, 3) Major theories and concepts in nursing. Emphasis on the theoretical study of nursing phenomena commonly found in client and client-nurse systems. (Seminar) Pre: enrollment in the M.S. program in nursing and concurrent enrollment in 502. Beck, Dufault, and Schmieding

- 502 Practicum in the Study of Phenomena in Nursing (1, 3) Field study of selected nursing phenomena in health care agencies. Emphasis on the clinical application of selected theoretical or conceptual frameworks. (Practicum) Pre: enrollment in the M.S. program in nursing and concurrent enrollment in 501. Beck, Dufault, and **Schmieding**
- 503 Expanded Nursing Assessment Skills (I and II, 3) Expansion of nursing assessment skills including health history taking and physical, psychological, and social assessment skills. Specific physical assessment skills included are inspection, auscultation, percussion, and palpation. (Lec. 2, Lab. 1) Pre: enrollment in the M.S. program in nursing. Fimbel-Coppa and Sweat-Carley
- 504 Expanded Nursing Assessment Skills: Pediatrics (1, 1) Application of expanded nursing assessment skills to children, Includes assessment of growth and development, psychosocial, cognitive, and physical well-being of children of all age groups. (Lec. 1) Pre: credit or concurrent enrollment in 503 or permission of instructor. Fimbel-Coppa or McGrath
- 505 Nursing Research (I or II, 3) An overview and analysis of current research in nursing with special focus on patient care. Students will design a research project. (Seminar) Pre: a course in statistics, credit or concurrent enrollment in 501, 502, or permission of instructor. Fortin, Kim, or Yeaw
- 506 Independent Study in Nursing (I and II, 2-6) Intensive study of a specific area of interest, a problem or issue in nursing under guidance of the faculty. (Independent Study) Pre: permission of graduate faculty. Staff
- 507 Theories of Practice for Nursing (II, 3) Analysis of general theories of practice for nursing and their applicability to various areas of clinical practice, (Seminar) Pre: 501, 502, or permission of instructor. Hirsch or Burbank
- 510 Nursing Leadership in the Health Policy Process (II, 3) Study of nurses' participation in the health policy process. Focus on theories for the development of nursing leaders. Analysis and application of creative nursing strategies for the enhancement of health care. (Seminar) Pre: enrollment in the M.S. program in nursing. Hirsch or Schmieding
- 511 Advanced Mental Health Nursing I (II, 3) Investigation of theories of healthy and psychopathological patterns of individual behavior from a mental health perspective. (Seminar) Pre:

- 501 and 502 and credit or concurrent enrollment in 512. Garey
- 512 Practicum in Advanced Mental Health Nursing I (II, 3) Field experience to develop competence in the practice of advanced mental health nursing. Emphasis on application of relevant theories in solving individuals' mental health problems. (Practicum) Pre: 501 and 502 and concurrent enrollment in 511. Garey
- 513 Advanced Mental Health Nursing II (1, 3) Theoretical analysis of current modes of advanced mental health intervention in order to explain strategies for solution of family, group, and community problems. (Seminar) Pre: 511, 512, and concurrent enrollment in 514. Garey
- 514 Practicum in Advanced Mental Health Nursing II (1, 6) Field experience to develop increased competence in the practice of mental health nursing intervention. (Practicum) Pre: 511, 512, and concurrent enrollment in 513.
- 520 Graduate Study Seminar (1 or II, 1) A seminar designed to facilitate the synthesis and examination of information learned in the master's program about nursing knowledge development, advancement of nursing practice, and leadership role development. (Seminar) Pre: completion of 30 graduate program credits and concurrent enrollment in the final sequence of concentration courses. Schmieding
- 521 Theoretical Study of Major Problems in Nursing Practice (II, 3) Major theories and concepts for developing strategies in nursing practice. Emphasis on developing nursing strategies through theoretical analysis of problems viewed in the context of organizational and societal systems. (Seminar) Pre: 501, 502, and concurrent enrollment in 522. Dufault
- 522 Practicum in the Study of Major Problems in Nursing Practice (II, 3) Field study of major nursing problems with emphasis on examination, evaluation, and revision of nursing strategies for problems in the context of organizational and societal systems. (Practicum) Pre: 501, 502, and concurrent enrollment in 521. Dufault
- 531 Primary Health Care Nursing I (II, 3) Theoretical knowledge and skills for the development of nursing strategies in analyzing, managing, and preventing health-related problems common to primary health care clients. (Seminar) Pre: 501, 502, 503, and ZOO 442. Fimbel-Coppa and Sweat-Carley

- 532 Practicum in Primary Health Care Nursing ! (II, 3) Clinical application of theoretical knowledge and skills as presented in 531. (Practicum) Pre: concurrent enrollment in 531. Fimbel-Coppa and Sweat-Carley
- 533 Primary Health Care Nursing II (I, 3) Theoretical study for the development of increased nursing competency in primary care practice. Emphasis on health care strategies to assist individuals and families in coping with health-related problems. (Seminar) Pre: 531, 532, and concurrent enrollment in 534. Fimbel-Coppa and Sweat-Carley
- 534 Practicum in Primary Health Care Nursing II (1, 6) Application of theoretical knowledge and skills for the development of nursing strategies for health promotion and management of health-related problems common to families. (Practicum) Pre: 531, 532, and concurrent enrollment in 533. Fimbel-Coppa and Sweat-Carley
- 541 Theoretical Study of Nursing Education (1, 3) Investigation of theories, concepts, and models applicable to nursing education. Emphasis on theoretical analysis to develop and explain strategies for the teaching of nursing. (Seminar) Pre: 521, 522, permission of instructor, and concurrent enrollment in 542. In alternate years. Next offered 1995–96. Hirsch
- 542 Practicum in Nursing Education (I, 6) Field experience in nursing education. Emphasis on the instructional design and the development of strategies for the teaching of nursing based on theoretical knowledge. (Practicum) Pre: 521, 522, or permission of instructor, and concurrent enrollment in 541. In alternate years. Next offered 1995–96. Hirsch
- 551 Theoretical Study of Nursing Administration (I, 3) Study of relation of nursing philosophy, organizational theories, and practice environment to nursing administration. Emphasis on theories, concepts, and issues that explain and advance strategies in nursing administration. (Seminar) Pre: 521, 522, or permission of instructor, and concurrent enrollment in 552. In alternate years. Next offered 1995–96. Schmieding
- **552 Practicum in Nursing Administration** (*I*, *6*) Field experience in nursing administration. Emphasis on role development and the examination, development, and implementation of strategies in nursing administration. (*Practicum*) *Pre: 521, 522, or permission of instructor, and concurrent enrollment in 551. In alternate years. Next offered 1995–96.* Schmieding

- 560 Ethical Theories, Nursing Practice, and Health Care (1 or 11, 3) Analysis of philosophic positions, ethical theories, and moral principles important to professional nurses in their clinical, educative, and administrative practice. (Seminar) Pre: B.S. or B.A. in a health-related field, one course in philosophy and ethics, or permission of instructor. Staff
- 561 Theories of Practice for Clinical Nursing (1, 3) Intensive analysis of theories of practice as applied to clinical nursing. Emphasis on theoretical knowledge of the nurse system phenomena in professional clinical nursing. (Seminar) Pre: 501, 502, 521, and 522, and concurrent enrollment in 562, 563, or 564. In alternate years. Next offered 1996–97. Hirsch
- 562 Advanced Clinical Study of Nursing Practice in Critical Care (I, 6) Study and application of the theories of practice and of biopsychosocial interaction in advanced critical care nursing. Analysis of patient problems and nursing strategies relevant to critical care patients. (Practicum) Pre: 501, 502, and credit or concurrent enrollment in 561. In alternate years. Next offered 1996–97. Fortin
- 563 Advanced Clinical Study of Nursing Practice in Gerontology (I, 6) Study and application of the theories of practice and of aging in advanced gerontological nursing. Analysis of central health problems and nursing strategies relevant to older people. (Practicum) Pre: 501, 502, and credit or concurrent enrollment in 561. In alternate years. Next offered 1996–97. Burbank
- 564 Advanced Clinical Study of Nursing Practice in Parent-Child Health (1, 6) Study and application of normal developmental and biopsychosocial stress theories in advanced clinical parent-child health nursing. Analysis of problems and nursing strategies relevant to parents and children. (Practicum) Pre: 501, 502, and credit or concurrent enrollment in 561. In alternate years. Next offered 1996–97. Hirsch and McGrath
- 569 Theoretical Study of Advanced Nursing (1, 3) Theoretical foundations of advanced nursing practice. Emphasis is on the reciprocal nature of the relationship between theories, client problems, and nursing strategies in the areas of advanced practice. (Seminar) Pre: 507, 521, 522, and concurrent enrollment in 562, 563, or 564, or permission of instructor. Next offered fall 1996. Hirsh

- 571 Theoretical Study of Well Women's Health Care (II, 3) A study of major theories, client issues, and nurse-midwifery strategies used in the care of well women seeking gynecological health care. (Seminar) Pre: 501, 502, and concurrent enrollment in 572. Staff
- 572 Practicum: Theoretical Study of Well Women's Health Care (II, 3) Clinical application of the theoretical knowledge and interventions in the care of well women in ambulatory health care settings. (Practicum) Pre: concurrent enrollment in 571. Staff
- 573 Theoretical Study of the Childbearing Woman and Her Family (II, 3) Within a systems perspective, theories are utilized to examine client issues related to the normal childbirth experience. Knowledge and skills relevant to nurse-midwifery strategies of normal childbirth are emphasized. (Seminar) Pre: credit or concurrent enrollment in 571, 572; concurrent enrollment in 574. Staff
- 574 Practicum: Theoretical Study of the Childbearing Woman and Her Family (II, 3) Theoretical application of nurse-midwifery strategies during the normal childbirth experience. Knowledge and skills relevant to patient care are emphasized. (Practicum) Pre: concurrent enrollment in 573. Staff
- 575 Advanced Practice: Collaborative Nurse-Midwifery (1, 3) Within a systems perspective, theories are utilized to examine client issues of the at-risk childbirth experience. Expanded nurse-midwifery strategies related to collaborative practice within the community are emphasized. (Seminar) Pre: concurrent enrollment in 576. Staff
- 576 Advanced Practice: Collaborative Nurse-Midwifery Practicum (I, 6) Field study of the clinical application of theoretical knowledge and skills in the at-risk childbirth experience. Use of collaborative practice and the management process within communities is emphasized. (Practicum) Pre: concurrent enrollment in 575. Staff
- 577 Practice and Integration of Nurse-Midwifery (1 or 11, 5) Comprehensive and practical application of clinical skills and theoretical knowledge in nurse-midwifery. Complete integration of the nurse-midwifery role with the client, family, and community. (Practicum) Pre: 575 and 576. Staff
- 590 Directed Study and Practice in Advanced Clinical Nursing (I or II, 3) In-depth study and supervised clinical practice in a specialized area of nursing. (Independent Study) Pre: graduate standing and permission of graduate faculty. Staff

- 601 Foundations of Nursing Science (II, 3) Analysis of the nature of nursing knowledge from the historical and epistemological perspectives. Focus on examination of theoretical, ethical, and methodological foundations of the development of nursing science. (Seminar) Pre: enrollment in the Ph.D. program in nursing. Kim and Fortin
- 602 Construction of Nursing Theory I: Inductive Process (II, 4) Study of inductive approaches to generating theory relevant to nursing science. Examination of multidisciplinary strategies for generation of theory from field data. (Seminar) Pre: enrollment in the Ph.D. program in nursing, 601, or permission of instructor. Schwartz-Barcott
- 603 Construction of Nursing Theory II: Deductive Process (I, 3) Study of deductive theory-building as applied to nursing science. Focus on the nature of deductive theories and the application of deductive process to nursing theory construction. (Seminar) Pre: enrollment in the Ph.D. program in nursing, 601, or permission of instructor. Kim
- 621 Nursing Theory and Research in the Client Domain (1, 3) In-depth, comparative analysis of existing nursing theories and research relevant to the client domain. Development of a research proposal for validation of a selected nursing theory. (Seminar) Pre: doctoral standing in nursing and completion of core courses in nursing. Schwartz-Barcott
- 631 Nursing Theory and Research in the Client-Nurse Domain (I or II, 3) Study of theoretical and research work in the client-nurse domain. Formulation and testing of hypotheses dealing with client-nurse phenomena. (Seminar) Pre: doctoral standing in nursing and completion of core courses in nursing. Kim and Miller
- 641 Nursing Theory and Research in the Practice Domain (I, 3) In-depth analysis of theoretical and research work in the nursing domain of practice. The expansion and refinement of knowledge for nurse-system phenomena of the practice domain. (Seminar) Pre: doctoral standing in nursing and completion of core courses in nursing. Kim
- 651 Advanced Methods in Nursing Research I (I, 3) In-depth study of theories and methods in sampling, research design, data collection, and data analysis, and their application to qualitative research in nursing. Emphasis on qualitative data collection methods. (Seminar) Pre: enrollment in the Ph.D. program in nursing, advanced statistics course, or permission of instructor. Fortin

- 652 Advanced Methods in Nursing Research II (II, 3) In-depth study of application of theories and methods in sampling, research design, data collection, data analysis for quantitative and evaluative research in nursing. (Seminar) Pre: enrollment in the Ph.D. program in nursing, 651, or permission of instructor. Fortin
- 653 Measurement and Instrument Development in Nursing Research (II, 3) In-depth study of theories and methods relevant to measurement and instrument development for nursing and health sciences. Emphasis on measurement as an ongoing process of successive approximation, refinement, and validation. (Seminar) Pre: completion of 652 or permission of instructor. Fortin
- 660 Philosophical Foundations for Health Care Research (1, 3) Presentation of the historical and philosophical basis of contemporary health care research. (Seminar) Pre: enrollment in the Ph.D. program in nursing. Burbank
- 671 Role Development in Nursing Research (II, 3) In-depth examination of the role of the nurse researcher as a member of a multidisciplinary team and in academia. Emphasis on theories and issues related to researcher role development. (Seminar) Pre: doctoral standing in nursing, 601, 602 or 603, and 660. Joseph and McGrath
- 699 Doctoral Dissertation Research (I or II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 995 Reading and Research in Nursing (I or II, 1–6) Advanced work by individual student on a selected issue in nursing under the direction of a faculty member. (Independent Study) Pre: graduate standing. S/U credit. Staff

Ocean Engineering (OCE)

Chairperson: Professor Spaulding

- 101 Introduction to Ocean Engineering (*II*, 1) Overview of ocean engineering topics pointing out the common areas with other engineering branches but emphasizing specific ocean applications. (*Seminar*) S/U only. Staff
- 215 Ocean Engineering Seminar I (I and II, 1) Topics in ocean engineering will be covered in a seminar form. New directions and established areas of ocean engineering will be presented. Speakers will be alternated between invited industry representatives, faculty, and students. (Seminar) Staff

- 307 Introduction to Engineering Wave Mechanics and Littoral Processes (II, 3) Description of coastal area and the study of beach dynamics and coastal protection methods. Linearized water waves, velocity, pressure, and wave group sound energy. Wave refraction: diffraction, shoaling, and breaking. Waves and water-level prediction. Nearshore waves and current. Littoral transport. (Lec. 3) Pre: MCE 354 or permission of instructor. Grilli
- 410 Basic Ocean Measurements (I or II, 3) Four or five basic ocean measuring exercises: current and tide, dissolved oxygen, wave frequency spectra, soil characteristics from cores, water depth, and bottom profiles. (Lec. 1, Lab. 6) Not for graduate credit. Tyce
- 411 Basic Coastal Measurements (I, 3) Basic coastal measuring exercises from boats, in situ, and on laboratory samples. Included will be measurement of current and tide, sediment transport and erosion, sediment testing, water testing, and bottom profiling. (Lec. 1, Lab. 3) Pre: advanced standing in civil engineering or permission of instructor. Not for graduate credit. Spaulding
- 416 Ocean Engineering Seminar II (I and II, 1) Topics in ocean engineering will be covered in a seminar form. New directions, established areas, and professional ethics in ocean engineering will be presented. Speakers will be alternated between invited industry representatives, faculty, and students. (Seminar) Not for graduate credit. S/U only. Spaulding
- 421 Marine Structure Design (II, 3) Statistical properties and spectra of sea waves; design of vertical breakwaters; design of sea walls; harbor tranquillity, design concept for offshore structures. (Lec. 3) Pre: 307. Hu
- 471 Underwater Acoustics and Data Analysis (II, 3) Underwater acoustics and time-series analysis. Fourier analysis of continuous discreet and random time processes. Fundamentals of acoustics, including transducers, arrays, propagation in the ocean, and sonar systems, (Lec. 3) Pre: permission of instructor. Not for graduate gredit. Stepanishen
- 483 Foundation Engineering
 See Civil and Environmental Engineering 483.
- 491, 492 Special Problems I, II (I and II, 1–6 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. Not for graduate credit. Staff

- 495 Ocean Systems Design Project (1, 4) Design project of an ocean-related system under the supervision of a faculty advisor. The project is to combine a number of different engineering and scientific disciplines. (Lec. 4) Pre: permission of instructor. Not for graduate credit. Staff
- 510 Engineering Ocean Mechanics (II, 3) Fundamental equations of estuarine and coastal hydrodynamics. Scaling of governing equations. Long period waves including seiches, tides, storm surges, and tsunamis. Wind- and estuarine-induced circulation. Pollutant and sediment transport. (Lec. 3) Pre: MCE 354 or equivalent. Spaulding
- 514 Engineering Wave Mechanics and Nearshore Processes (1, 3) Linear water wave boundary value problem. Engineering wave properties. Nonlinear waves (long waves, Stokes waves, stream function waves). Nearshore hydrodynamics and wave breaking. Fully nonlinear transient waves. (Lec. 3) Pre: MCE 455 or equivalent. Grilli
- 522 Dynamics of Waves and Structures (1, 3) Deterministic analysis for SADOF structures; MDOF dynamic analysis; distributed-parameter systems; linear and second-order Stokes wave theories; wave forces on cylinders; chaotic vibration of marine structures. (Lec. 3) Pre: MCE 464 or permission of instructor. Hu
- 534 Corrosion and Corrosion Control See Chemical Engineering 534.
- 535 Advanced Course in Corrosion See Chemical Engineering 535.
- 537 Advanced Materials Engineering See Chemical Engineering 537.
- 560 Introduction to Data Collection Systems (1, 3) Practical problems of data collection. Probes and sensors, interfaces, signal conditioning, and storage. Examples found among the current research areas within ocean engineering will be emphasized. (Lec. 3) Pre: graduate standing in engineering or permission of instructor. In alternate years. Next offered fall 1995. Tyce
- 561 Introduction to the Analysis of Oceanographic Data (1, 3) Design of oceanic experiments to determine spatial and temporal sampling rate, precision, accuracy, signal-to-noise ratio, etc. Description of typical ocean data collection and analysis systems. Development of relevant techniques. (Lec. 3) Pre: IME 411, MTH 451, or equivalent. Miller
- 565 Ocean Laboratory I (I or II, 3) Measurements, experiments, operation of apparatus in the ocean and in the laboratory. Statistical

- theory, planning multivariable experiments, checking of data, etc. (Lec. 1, Lab. 6) Pre: graduate standing in engineering or oceanography, or permission of instructor. Tyce
- 571 (or ELE 571) Underwater Acoustics I (l. 3) Introduction to sound generation, transmission, and reception, including vibration of mechanical systems, acoustic waves in fluids, acoustic transducers and arrays, acoustic propagation in the ocean, and sonar systems. (Lec. 3) Stepanishen
- 581 Experimental Geomechanics See Civil and Environmental Engineering 581.
- 582 (or CVE 582) Seabed Geotechnics (I or II. 3) Geotechnical engineering principles as applied to submarine slope stability, bearing capacity, anchoring; emphasis on effective stress principle, compressibility, and shear strength of marine sediments. (Lec. 3) Pre: CVE 381 or equivalent. Silva
- 583 Advanced Foundation Engineering See Civil and Environmental Engineering 583.
- 591, 592 Special Problems (I and II, 1-6 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. Staff
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 605, 606 Ocean Engineering Seminar (I and II, 1 each) Seminar discussions including presentation of papers based on research or literature survey. (Seminar) Required of all resident graduate students. May be repeated for a maximum of 2 nonprogram credits. S/U credit. Staff
- 611 Coastal and Estuarine Environmental Modeling (1, 3) Numerical modeling techniques to solve problems in coastal and estuarine circulation and pollutant transport. Application of models to predict tidal, wind, and densityforced circulation, constituent and sediment transport, oil and chemical spill transport. (Lec. 3) Pre: 510 or permission of instructor. Spaulding
- 614 Coastal Modeling (II, 3) Mild slope equation. Parabolic wave equation. Harbor oscillations and wave field modeling (refraction-diffraction). Nearshore hydrodynamic models. Fully nonlinear wave model (boundary elements) and applications. (Lec. 3) Pre: 514. Grilli
- 623 Random Waves and Vibrations (II, 3) Random ocean waves; random wave kinematics and forces; wave kinematics near ocean surface; lin-

- ear and second-order random wave theories: wave simulations; linear random vibration; nonlinear stochastic dynamic analysis. (Lec. 3) Pre: 522. Hu
- 661 Analysis of Oceanographic Data Systems (1, 3) Design of systems for deep-ocean and estuarine data collection and processing. Spacetime sampling, multivariate analysis, and convergence of moments as applied to ocean data estimation and system design. Current topics in ocean data systems. (Lec. 3) Pre: ELE 506 or equivalent. Miller
- 666 Ocean Laboratory II (I. 3) Advanced design/laboratory course in ocean mapping and instrumentation. Students work as a team designing and deploying ocean instrumentation, including sonars, navigation systems, vessels, buoys, underwater sensors, at locations of opportunity. (Lec. 1, Lab. 6) Pre: 565 or permission of instructor. Tyce
- 672 (or ELE 672) Underwater Acoustics II (II, 3) Sound transmission in ocean, transducers, active signal design for range and Doppler resolution, ambient and platform noise, classical and wave vector-frequency methods of beamforming, adaptive beamforming, characteristics of targets, and active/passive sonar systems. (Lec. 3) Pre: 571. Stepanishen
- 673 Advanced Course in Underwater Acoustic Propagation (1, 3) Analysis of propagation from a concentrated acoustic source in the ocean by methods such as advanced normal mode theory, numerical integration, and Fast Fourier Transforms. Applications to ocean features such as surface ducts, shadow zones, deep-sound channel, etc. (Lec. 3) Pre: 571 or equivalent. Stepanishen
- 674 Nonlinear Acoustics (I or II, 3) Topics in the nonlinear acoustics of fluids, propagation and interactions of finite-amplitude sound waves, parametric sonar, sound generation by turbulence, cavitation noise, shock waves, underwater explosions, radiation pressure and acoustic streaming. (Lec. 3) Pre: 571 or permission of instructor. Stepanishen
- 675 Processing of Underwater Acoustic Data (II, 3) Description of the underwater acoustic environment. Methods of measuring underwater acoustic signals. Data analysis of passive and active signals. Applications of underwater acoustics to oceanographic survey. (Lec. 3) Pre: ELE 506 or equivalent. Stepanishen
- 676 Acoustic Radiation from Underwater Vibrators (I or II, 3) Fundamentals of acoustic radiation from submerged structures. Radiation

from planar, cylindrical, and spherical surfaces. In-vacuo and in-fluid vibration of elastic bodies. Acoustic coincidence and fluid-loading effects on radiation from elastic bodies. (Lec. 3) Pre: 571 or permission of instructor. Stepanishen

- **677 Statistical Sonar Signal Processing** See Electrical Engineering 677.
- 688 (or CVE 688) Marine Geomechanics (1 or 11, 3) Integrated study of marine geotechnics and marine geology. Topics include sedimentary processes, acoustic characteristics, slope stability, consolidation and stress history, engineering properties and other subjects related to seabed utilization. (Lec. 3) Pre: CVE 381 or permission of instructor. Silva
- 691, 692 Special Problems (I and II, 1–6 each) Advanced work under supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Pre: permission of chairperson. Staff
- 699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Oceanography (OCG)

Dean: Professor Leinen

- 123 Oceans, Atmospheres, and Global Change (II, 4) The impact of human activities on the oceans, atmospheric composition, and climate set against a background of natural processes in and history of global changes in climate and ecosystems. (Lec. 3, Lab. 3) Merrill (N)
- **401 General Oceanography** (*I and II, 3*) General survey in the major disciplines including geological, physical, chemical, and biological aspects integrated into a conceptual approach to the ocean sciences. (*Lec. 3*) *Pre: at least one laboratory course in a physical or biological science and junior standing or above.* Staff (N)
- 483, 484 Laboratory and Research Problems in Physics
 See Physics 483, 484.
- 491 Ocean Studies (I and II, 15) Full-time intensive work experience with Graduate School of Oceanography research staff at Narragansett Bay Campus. Student expected to participate in research program, seminars, and other activities of Bay Campus. (Independent Study) Pre: junior standing in natural sciences, natural resources, or engineering, and permission of staff. Not for graduate credit in oceanography. S/U only. Staff

- 493, 494 Special Problems and Independent Study in Oceanography (1 and 11, 1–6 each) Research in oceanography conducted as supervised individual study. (Independent Study) Pre: junior or senior standing in natural science, natural resources, or engineering, and permission of staff. S/U only. Staff
- **501** Physical Oceanography (*I*, *3*) Basic course covering physical properties of seawater, heat budget, distribution of variables, dynamics, water masses and general circulation, waves and tides. (*Lec. 3*) Pre: PHY 213 and MTH 141. Hebert
- **505** Marine Analytical Chemistry (1, 3) Application of analytical methods to marine problems with emphasis on understanding basic methods and instruments. Combines general principles with practical experience. Students conduct analytical projects in the laboratory. (Lec. 1, Lab. 2) Offered every fall. Kester or Heikes
- **510** Descriptive Physical Oceanography (*II*, 3) Observed distributions of temperature, salinity, currents; methods of deducing deep flow; physical properties of seawater; flow in estuaries; practical work in the analysis of oceanographic data; study of recent literature. (*Lec.* 3) *Pre:* 501. Rossby
- **521** Chemical Oceanography (*II*, 3) Processes regulating the composition of seawater and the distribution of chemical species. The interaction of marine chemistry with the ocean floor, atmosphere, and marine organisms. (*Lec. 2, Lab. 2*) *Pre: CHM 101 and 112 and PHY 213.* Pilson
- **523** Organic Geochemistry of Natural Waters (*I*, 3) Chemistry of organic matter in natural waters with emphasis on the marine environment. Topics include a consideration of the origin, nature, and biogeochemical reactions of organic matter in aquatic environments. (*Lec. 3*) Pre: CHM 228 or permission of instructor. Offered in odd-numbered years. Quinn
- **524** Chemistry of the Marine Atmosphere (*II*, 3). Chemistry and physics of marine aerosols, trace gases, and precipitation; cycles and budgets of atmospheric nitrogen, sulfur, halogen, and carbon compounds; effects of man on the marine atmosphere. (*Lec. 3*) *Pre: 521 and CHM 432 or permission of instructor. In alternate years. Next offered spring 1997.* Staff
- **531 Synoptic and Dynamic Meteorology** (*I*, *3*) Observed structure of atmosphere; principles of balanced flows, waves, and disturbances. Observations and models of storm formation, semi-permanent features, and general circulation. Re-

- lationship between weather and climate. (Lec. 3)
 Pre: PHY 203 or permission of instructor. Merrill
- **540** Geological Oceanography (*II*, 3) Origin and evolution of the ocean basin and its margin: morphology, structure, plate tectonics, volcanism, geochemistry, stratigraphy, sedimentation, and paleoceanography. (*Lec. 2, Lob. 2*) *Pre: GEL 103 or 105 or permission of instructor.* Staff
- **561 Biological Oceanography** (1, 4) Dynamics of marine ecosystems; patterns of production and distribution of plankton, benthos, and nekton in relationship to their environment. (*Lec. 3, Lab. 2*) *Pre: general ecology*. Oviatt
- **574 Biology of Marine Mammals** (*II*, 3) Migration, reproduction, social organization, classification, anatomy, populations, physiology, and communications of cetaceans and pinnipeds. (*Lec. 2, Lab. 2*) *Pre: permission of instructor. In alternate years. Next offered spring 1996.* Winn
- 576 (or MIC 576) Marine Microbiology (1, 4) The role of bacteria, fungi, apochlorotic algae, flagellates, sarcodines, and ciliates in the cycling of organic matter is discussed in the context of their structure, habitats, trophic modes, ecology, processes, and taxonomy. (Lec. 3, Lab. 3) Pre: CHM 112 and MIC 201 or 211 or permissian of instructor. Offered in odd-numbered years. Staff
- **599 Master's Thesis Research** (*I and II*) Number of credits is determined each semester in consultation with the major professor or program committee. (*Independent Study*) S/U credit. Staff
- 605 Dynamical Oceanography (*II*, 3) Simple steady-state theories applied to ocean motion. Review of well-known force balances in oceanography, wind-driven circulation, thermohaline circulation, the thermocline, oceanic boundary layers, nearshore circulation, diffusion. (*Lec. 3*) *Pre: 501*. Watts
- **606 Aquatic Community Ecology** (*II*, 3) Lectures and discussion of controversial topics contrasting marine and freshwater communities. Current topics of interest will vary on a yearly basis. (*Lec. 3*) *Pre: permission of instructor.* A. Durbin, E. Durbin, or Twombly
- 610 Geophysical Fluid Dynamics I (I, 3) Natural world fluid dynamics emphasizing ocean circulation. Classical fluid dynamics; GFD fundamentals (rotation and stratification); Taylor-Proudman theorem; potential vorticity; planetary waves; geostrophic contours; shallow water quasi-geostrophic theory; frictional layers. (Lec. 3) Pre: 606 or permission of instructor. Hara

- 611 Geophysical Fluid Dynamics II (II, 3) Continuously stratified quasi-geostrophic theory; classical and modern theories of the wind-driven ocean circulation; stability theory; oceanic convection; wave-mean flow interactions; ageostrophic dynamics; topographical effects. (Lec. 3) Pre: 610 or permission of instructor. Rothstein
- 613 Waves (II, 3) Generation, propagation, and decay of surface waves, internal waves, and Rossby waves in the ocean. (Lec. 3) Pre: MCE 550 or permission of instructor. Wimbush
- 614 Tides (1, 2) Generation, propagation, and dissipation of ocean tides. Earth tides. Relation between theory and observation. Tidal analysis. (Lec. 2) Pre: 501. Wimbush
- 620 Chemical Distributions (II, 3) Interdisciplinary study of the processes responsible for oceanic chemical distributions with emphasis on conservative properties, biologically active constituents, and radionuclides. Includes projects involving data-processing analysis. (Lec. 3) Pre: 501, 521, 540, and 561 or permission of instructor. Kester
- 623 Physical Chemistry of Seawater (1, 3) Characterization of dissociation, solubility, and redox equilibria in seawater. Partial molar volumes, conductivity, and diffusion of ions in seawater. Kinetic studies in seawater; effect of temperature, salinity, and pressure on physiochemical properties in seawater. (Lec. 3) Pre: 521 and CHM 432 or permission of instructor. Offered in odd-numbered years. Next offered fall 1995. Kester
- 625 Organic Geochemistry of Sediments (1, 3) Chemistry of organic matter in recent to ancient sediments. Topics include the source, characterization, significance, and fate of sedimentary organic compounds with emphasis on the marine environment. (Lec. 3) Pre: 523 or permission of instructor. Offered in even-numbered years. Quinn
- 628 High-Temperature Geochemistry (1, 3) Principles and factors governing the distribution of trace elements in volcanic processes. Applications to the study of rock genesis, mantle dynamics, oceanic crust formation, and hotspots. (Lec. 3) Pre: CHM 431 or equivalent, or permission of instructor. Offered in even-numbered years. Next offered fall 1996. Schilling
- 631 Seminar in Marine and Atmospheric Chemistry (I and II, 1) Discussion of problems of current interest in marine chemistry. (Seminar) Pre: 521 or permission of instructor. S/U credit. Staff

- 643 Subduction Zones (II, 3) Structure, petrology, and geochemistry of subduction zones, island arcs, and other magmatic arcs at convergent plate margins. Petrogenesis of andesites and related magmas. (Lec. 3) Pre: 540 or permission of instructor. Sigurdsson
- 644 Global Paleoclimatology (1, 3) Principles of modern climatology, climate dynamics, modeling, and climate indicators with application to the geologic record: Phanerozoic climates and relationships to tectonics, paleogeography, and ocean-atmosphere composition. (Lec. 2, Lab. 2) Pre: 510 and 540. In alternate years. Next offered fall 1995. Hagelberg
- 645 Petrology of the Oceanic Crust (1, 3) Nature and origin of igneous and metamorphic rocks of the oceanic crust of the earth: mineralogy, petrology, and petrogenesis of seafloor rocks; metamorphism of the ocean crust. (Lec. 3) Pre: graduate standing or permission of instructor. Sigurdsson
- 646 Deep-Sea Sediments and Processes (II, 3) Deep-sea sediments and their relation to oceanic processes such as solution, productivity, and dilution. Sedimentary distributions in time and space as related to tectonic models. Paleoclimatology, and past water mass distributions and conditions. Term paper. (Lec. 3) Pre: graduate standing or permission of instructor. In alternate years. Next offered spring 1997. Leinen
- 649 Plankton Paleoecology (1, 3) Concepts of paleoecology. Interaction between planktonic marine organisms and their environment over evolutionary time scales. The use of fossil plankton in reconstructing paleoenvironmental conditions and paleoecological systems. Patterns, causal hypotheses, and geological consequences of temporal and geographic variation in Cretaceous and Cenozoic plankton assemblages. (Lec. 2, Lab. 2) Pre: permission of instructor. In alternate years. Next offered fall 1996. D'Hondt
- 651 Marine Stratigraphy (1, 3) Concepts and methods of biostratigraphy, lithostratigraphy, and chronostratigraphy. Stratigraphic nomenclature. Stratigraphic correlation and completeness. Special focus will be placed on the integration of multiple stratigraphic techniques and their application to the Cretaceous and Cenozoic marine record. Class discussion of advances and problems in recent research articles. (Seminar) Pre: permission of instructor. In alternate years. Next offered fall 1995. D'Hondt
- 652 Marine Geophysics (II, 3) Survey of basic subdisciplines of marine geophysics including plate tectonics, gravity, magnetics, heat flow,

- reflection and refraction seismology. Basic theory and methods of data collection and interpretation emphasized. (Lec. 3) Pre: 540 or permission of instructor. Staff
- 655 Paleomagnetism and Geomagnetism (II, 3) Earth's magnetic field, origin and dynamo theory, rock magnetism and paleomagnetism, field directions in rocks and sediments, and temporal variation. Magnetic recording by ridges and seamounts; forward/inverse modeling, skewness analysis. (Lec. 3) Pre: 540 or permission of instructor. In alternate years. Next offered spring 1996. Larson or King
- 661 (or BOT 661) Phytopiankton Taxonomy (1. 3) Classical and modern systems and techniques for the identification, nomenclature, and classification of planktonic algae, with emphasis on marine forms. Phylogeny will be briefly considered. (Lec. 1, Lab. 4) Pre: permission of instructor. In alternate years. Next offered fall 1996. Hargraves
- 663 (or BOT 663) Phytoplankton Physiology (1, 3) Metabolic processes and methods of their investigation in phytoplankton with primary emphasis on functions pertinent to their ecology. Includes adaptation, uptake of nutrients, excretion, rhythms, pigments, and photosynthesis. (Lec. 3) Pre: graduate standing or permission of instructor. Swift
- 664 (or BOT 664) Phytopiankton Ecology (II, 3) Biology and ecology of the pelagic marine microscopic algae with emphasis on their adaptations, physiological ecology, distribution, succession, production, and regional and seasonal dynamics. (Lec. 3) Pre: permission of instructor. Smayda
- 665 Marine Bio-Optics and Remote Sensing (II, 3) Bio-optical properties of ocean waters. Major focus is on basic principles of visible-band ocean remote sensing and its application to determining phytoplankton pigment and production at regional to global scales. (Lec. 2, Lab. 2) Pre: 561. In alternate years. Next offered spring 1997. Yoder or Swift
- 666 Zooplankton (II, 3) Biology of marine zooplankton, dealing with morphology, adaptation, distribution, physiology, production, and interrelationships with other members of the marine biota. (Lec. 1, Lab. 4) Pre: permission of instructor, Staff
- 667 (or BOT 667) Advanced Phytoplankton Seminar (II, 1) Specialized and advanced areas of phytoplankton biology and research, including systematics, physiology, and ecology. (Seminar) Pre: graduate standing or permission of in-

structor. Moy be repeoted. S/U credit. Hargraves, Smayda, and Swift

- 668 Productivity of Ocean Margins (II, 3) Processes affecting biological productivity of ocean margin waters. Major focus on dynamics of production in mid to outer shelf waters and adjacent boundary currents. (Lec. 3) Pre: 501, 561. In alternate years. Next offered spring 1996. Yoder
- 669 Marine Fish Ecology and Production (II, 3) Functioning of fishes in major world ecosystems is explored through comparison of feeding ecology, bioenergetics, and production rates. (Lec. 2, Lab. 2) Pre: 561 or permission of instructor. A. Durbin and E. Durbin
- 670 Fish Population Dynamics (II, 3) Methods for estimating vital statistics of fish populations, stock assessment theory and methods, analytical and empirical model development, and fisheries forecasting. (Lec. 3) Pre: graduate standing or permission of instructor. Collie
- 671 Marine Zooplankton Ecology (II, 3) Marine zooplankton community structure and function including the relation of spatial and temporal distribution patterns to the oceanic environment, organism interactions, secondary production, feeding, and reproduction. Emphasis on open-ocean communities. (Lec. 3) Pre: 561 or permission of instructor. Wishner
- 678 Low-Temperature Geochemistry and Isotope Geology (II, 3) A study of processes important in determining the chemical and isotopic mass balance of the oceans and the geochemistry of deep-sea sediments. (Lec. 3) Pre: 521. Bender
- 679 (or ZOO 679) Animal Communication (I, 2) Visual, chemical, and auditory communication in animals, including receptor systems, feedback, and redundancy. Functional aspects and organization of communication. Discussion of readings. Research problem can be taken under 691 or ZOO 693. (Lec. 2) Pre: ZOO 467 or equivalent and permission of instructor. In alternate years. Next offered fall 1995. Winn
- 681 Marine Pollution (II, 3) The chemical and biological processes governing the fate and effects of pollutants in the marine environment are introduced. Approaches used in the analyses and modeling of marine pollution will be introduced. (Lec. 3) Pre: 521, 561, or permission of instructor. Staff
- 689 Coastal Marine Ecosystems (II, 3) Comparative analysis of community structure in estuaries and shelf waters. Biological characteriza-

- tion of specific habitats with respect to general properties of the physical-chemical-geological environment. Class-developed databases for comparisons of Narragansett Bay with estuaries of the world. (Lec. 2, Lab. 1) Pre: 561. Staff
- 691, 692 Individual Study (I and II, 1-6 each) Individual study of assigned topics or special problems involving literature search and/or original investigation under one or more members of the staff, (Independent Study) Staff
- 693, 694 Special Studies (I and II, 1-4 each) Studies of specialized topics in the marine sciences. (Independent Study) Staff
- 695 Seminar in Oceanography (I and II, 1 each) Students give seminar reports on problems and current research in various areas of oceanography. (Seminar) Attendance and registration ore required of all graduate students in residence, but no more than 2 credits are allowed for a program of study. S/U credit. Yoder
- 699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 930 Workshop in Oceanography Topics for Teachers (I and II, 0-3) Especially designed for teachers of physical sciences. Basic topics in oceanography from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification. Staff

Note: Graduate students in oceanography choose from supporting courses in other departments.

Pharmacognosy (PCG)

Acting Chairperson: Dean Luzzi

- 445, 446 General Pharmacognosy (I and II, 3 each) Natural products of biological origin as important pharmaceuticals. Sources, process of isolation, and general fundamental properties. (Lec. 3) Pre: CHM 228, MIC 201, or equivalent. Shimizu and Martin
- 497, 498 Special Problems (I and II, 1-3 each) Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Independent Study) For undergraduate students only. Staff
- 521, 522 Seminar (I and II, 1 each) Seminar discussions including presentation of papers on selected topics in pharmacognosy. (Seminar) Required of all graduate students, with a maximum of 1 credit allowed per year. May be repeated for a maximum of 3 credits. Staff

- 533 Medicinal Plants (1, 2) Problems in drug plant chemotaxonomy with field work in the drug plant gardens. Emphasis is placed on certain alkaloid, glycoside, and oil-yielding plants. Weedicides and insecticides as related to measures for control. (Lec. 1, Lab. 3) Pre: 446 or equivalent. Staff
- 536 Antibiotics (II, 3) Advanced course on concept of antibiosis, biosynthesis pathways of antibiotic production, testing, chemistry, mechanism of action, medicinal and pharmaceutical uses of antibiotics. Phenomena of sensitivity and resistance; emphasis on entities of importance in pharmaceutical research and production. (Lec. 3) Pre: groduate or fifth-year undergraduote pharmacy standing. In alternate years. Staff
- 548 Physical Methods of Identification See Medicinal Chemistry 548.
- 551, 552 Chemistry of Natural Products (I and II, 3 each) Introduction to chemistry of certain groups of natural products especially in relation to their chemotaxonomic position in plant classification. Topics limited to secondary metabolites; e.g., terpenoids, phenolic compounds, aromatic compounds, phytosterols, alkaloids. (Lec. 3) Pre: CHM 228 and 230. In alternate years. Next offered 1995-96. Shimizu
- 597, 598 Special Problems (I and II, 1-3 each) Special graduate student project assignments in the study of natural drug research under the supervision of faculty. (Independent Study) Pre: graduate standing. May be repeated for a maximum of 6 credits. Staff
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 633, 634 Biosynthesis (I and II, 3 each) Biogenesis of medicinally active principles of biological origin. Emphasis given to organic acids, polysaccharides, glycosides, steroids, and certain nitrogenous compounds. (Lec. 3) In alternate years. Next offered 1996-97. Staff
- 635, 636 Pharmacognosy Techniques (I and II, 3-4 each) Physical and chemical factors influencing growth and development of active principles of drug plants. Certain biological analyses of results are performed. (Lec. 1, Lab. 6-9) Staff
- 697, 698 Research in Pharmacognosy (I and II, 1-3 each) Literature survey, laboratory work, and a detailed research report on one or more assigned topics. (Independent Study) Staff

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Pharmacology and Toxicology (PCL)

Chairperson: Professor Shaikh

- 202 Maintaining Health in the Age of Chemicals (II, 2) Introduction for the general student to the potential hazards posed by drugs, food additives, and pollutants to the maintenance of health. (Lec. 2) Not for program credit for nursing or pharmacy majors in the third year or beyond. Swonger and Staff
- **221** Dental Therapeutics (*I*, *2*) Medicinal agents, their actions and therapeutic uses, with special emphasis on substances employed in dental practice. (*Lec. 2*) Open to dental hygiene majors only. Rodgers
- **225** Pharmacology and Therapeutics I (*l*, *2*) Properties, actions, uses, adverse effects, and interactions of drugs used in treatment of disease. (*lec. 2*) Pre: ZOO 242. Open to students in the College of Nursing only. Swonger
- **226** Pharmacology and Therapeutics II (II, 2) Continuation of 225. Properties, actions, uses, adverse effects, and interactions of drugs used in treatment of disease. (Lec. 2) Pre: Zoo 242. Open to students in the College of Nursing only. Swonger
- **327 Introduction to Human Pathophysiology** (*I*, *3*) Systems approach to normal and abnormal human physiology, with selected examples of important and well-defined human diseases. Participating faculty include scientists and clinical practitioners. (*Lec. 3*) *Pre: BCH 311, ZOO 242, and MIC 201*. Rodgers and Staff
- 436 (or PSY 436) Psychotropic Drugs and Therapy (I and II, 3) Interaction of drug and nondrug therapy and of physiological and psychological origins of psychopathology. Intended for advanced undergraduate and graduate students interested in clinical psychology. (Lec. 3) Pre: any one of the following—BIO 102, ZOO 111, 121, PSY 381, or permission of instructor. Swonger
- 443 General Pharmacology Laboratory (II, 1) Effects of drugs on physiological function with reference to responses by tissue systems. Toxic effects, mechanisms of action, and dosage. (Lab. 3) Pre: fourth-year standing or permission of chairperson. Chichester, Shaikh, and Staff

- 444 General and Clinical Pharmacology and Toxicology I (I and II, 3) Principles of drug action with emphasis on effects of drugs and other chemicals on physiological function of various organ systems. Mechanisms of action, toxic effects, and pertinent clinical aspects will be discussed. (Lec. 3) Pre: ZOO 242, BCH 311, and PCL 327, or permission of instructor. Babson and Staff
- **445 General and Clinical Pharmacology and Toxicology II** (*I and II, 3*) Principles of drug action with emphasis on effects of drugs and other chemicals on physiological function of various organ systems. Mechanisms of action, toxic effects, and pertinent clinical aspects will be discussed. (*Iec. 3*) *Pre: 327 and 444 or permission of instructor.* Shaikh and Staff
- 446 General and Clinical Pharmacology and Toxicology III (I and II, 3) Principles of drug action with emphasis on effects of drugs and other chemicals on physiological function of various organ systems. Mechanisms of action, toxic effects, and pertinent clinical aspects will be discussed. (Lec. 3) Pre: 327, 444, and 445 or permission of instructor. Swonger and Staff
- 497, 498 Special Problems (I and II, 1–3 each) Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Independent Study) Pre: permission of chairperson. Staff
- **521, 522 Seminar** (I and II, 1 each) Seminar discussions and presentation of papers on selected topics in pharmacology. (Seminar) Required of all graduate students, with a maximum of 1 credit allowed per year. May be repeated for a maximum of 3 credits. Staff
- 544 Forensic Toxicology (1, 3) Theoretical and practical aspects of poisoning including the isolation and identification of toxic materials from pharmaceuticals, body fluids, and tissues. Isolation and identification of physiological fluids from stains, hairs, and tissue with application to forensic medicine. (Lec. 2, Lab. 3) Pre: permission of instructor. In alternate years. Next offered spring 1998. Staff
- 546 Advanced Toxicology (II, 3) Toxic effects of selected drugs and other xenobiotics on physiological and biochemical processes. (Lec. 3) Pre: permission of instructor. In alternate years. Next offered spring 1997. Shaikh
- 572 Neural Bases of Drug Action (1, 3) Review of neuroanatomy, neurochemistry, and neurophysiology as they relate to drug action. (Lec. 3) Pre: 446 or equivalent or permission of instructor.

- *In alternate years. Next offered fall 1995.* Swonger
- **599 Master's Thesis Research** (*I and II*) Number of credits is determined each semester in consultation with the major professor or program committee. (*Independent Study*) S/U credit.
- 641 Biochemical Pharmacology (1, 3) Theory and application of pharmacological studies at the cellular and subcellular levels and their significance to drug action in the intact organism. (Lec. 2, Lab. 3) Pre: permission of instructor. In alternate years. Next offered fall 1997. Chichester
- 642 (or BCH 642) Biochemical Toxicology (*l*, 3) Biochemical and molecular aspects of chemically induced cell injury and chemical carcinogenesis. (*Lec. 3*) Pre: permission of instructor. In alternate years. Next offered fall 1996. Babson
- **644 Cardiovascular Pharmacology** (*II*, 3) Cellular mechanisms of drug action as a basis for understanding therapeutic effects. Emphasis on current developments in antihypertensive, antiarrhythmic, antianginal, and cardiotonic drug research. (*Lec.* 3) *Pre: permission of instructor. Next offered spring 1996.* Rodgers
- 697, 698 Research in Pharmacology (I and II, 1–5 each) Literature survey, laboratory work, and a detailed research report on one or more assigned topics. (Independent Study) Staff
- 699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Pharmacy Practice (PHP)

Chairperson: Professor Dudley

- **360 Hospital Pharmacy** (*II*, *3*) Introduction to practice of pharmacy in hospitals, including both professional and administrative activities. Field trips to representative hospital pharmacies. (*Lec. 3*) *Pre: fourth-year standing.* Oliver and Staff
- 411 Biostatistics II See Statistics 411.
- 455, 456 Pharmacotherapeutics I, II (I and II, 4 each) The use of drugs in the treatment of human disease. Application of scientific, social, and economic principles to the development and assessment of drug therapy plans. (Lec. 4) Pre: successful completion of all required courses in the first six semesters of the curriculum. Owens and Dufresne

- 471 Contemporary Pharmacy Practice Laboratory (I and II, 2) Issues associated with the dispensing of medication, use of patient profiles, and effective interaction with patients and health professionals in simulated practice sessions. (Lec. 1, Lab. 3) Pre: APS 459, FSN 444, PCL 445, PCG 446, MCH 443; concurrent enrollment in APS 461 and 462. Nat for graduate credit.
- 484 Institutional Pharmacy Externship (I and II, 5) Structured practical experience in selected institutional pharmacies. Participation in drug distribution, inventory control, drug utilization review, and other aspects of contemporary pharmacy practice. (Practicum, 40 hours per week) Pre: 456, 471, APS 461, 462, PCL 445, 446, and MCH 444. Not for graduate credit. Pedro, Oliver, and Lahari
- 485 Community Pharmacy Externship (I and II, 5) Structured practical experience in selected community pharmacies. Participation in patient counseling, drug distribution, and other aspects of contemporary pharmacy practice. (Practicum, 40 hours per week) Pre: 456, 471, APS 461, 462, PCL 445, 446, and MCH 444. Not for graduate credit. Pedro, Oliver, and Lahari
- 486 Specialty Externship (I and II, 3-6) Structured practical experience in institutional, community, and nontraditional pharmacy settings. (Practicum) Pre: permission of chairperson. May not be taken concurrently with 484, 485, or 490. May be repeated for a maximum of 12 credits. Not for graduate credit. Pedro and Lahari
- 490 Clinical Pharmacy Clerkship (1 and 11, 5) Faculty-supervised clinical pharmacy experience in affiliated hospitals. Development of general clinical problem solving and communications skills. (Practicum, 40 hours per week) Pre: 456, 471, APS 461, 462, PCL 445, 446, and MCH 444. Not for graduate credit. Staff
- 497, 498 Special Problems (I and II, 1-3 each) Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Independent Study) Pre: permission of chairperson. Staff
- 499 Specialty Clerkship (I and II, 3-6) Facultysupervised clinical pharmacy experience in affiliated institutional and ambulatory health care settings. Development of clinical pharmacy skills in various specialty areas. (Practicum) Pre: permission of chairperson. May not be taken concurrently with 485 or 490. May be repeated for a maximum of 12 credits. Not for graduate credit. Staff

PHP Courses for Doctor of Pharmacy Program

- 511, 512 Advanced Pharmacotherapeutics (1) and II, 3 eoch) The clinical use of medications in a disease-oriented approach. The basic concepts of pharmacology, pharmacy, pathophysiology, and biochemistry will be correlated to the treatment of disease. (Lec. 3) Pre: fifth-year standing in the Doctor of Pharmacy program or permission of instructor. Must be taken concurrently with 561, 562. Staff
- 542 Drug-Induced Diseases (1, 2) An overview of diseases induced or aggravated by drug therapy. The course is organized using an organ system/disease-state approach. (Lec. 2) Pre: enrollment in Doctor of Pharmacy program or 455 and 456. Owens
- 544 Physical Assessment (II, 1) Organ system approach to components of physical examination and evaluation. Emphasis is placed on understanding those physical signs and symptoms which may be drug-induced. Practice skills are introduced. (Lec. 3) Pre: enrollment in the Doctor of Pharmacy program or permission of instructor. Geletko
- 561, 562 Advanced Human Pathophysiology (I and II, 4 each) The etiology, epidemiology, pathology, and clinical laboratory manifestation of diseases occurring in humans. This intensive course will be taught in a biomedical format. (Lec. 4) Pre: fifth-year standing in the Doctor of Pharmacy program or permission of instructor. Owens and Staff
- 581, 582 Clinical Pharmacy Seminar (I and II, 1 each) Presentations made by students on appropriate advanced clinical pharmacy topics. (Seminar) Pre: fifth- or sixth-year standing in the Doctor of Pharmacy program or permission of instructor. Dudley and Staff
- 590 Advanced Clinical Pharmacy Clerkship (I and II, 5) Through direct clinical contact, students will learn how to provide optimal pharmacotherapy for patients. This will be accomplished by collecting and interpreting data to design, recommend, implement, and modify patient-specific pharmacotherapy in collaboration with other health professionals. (Five credits taken five times for a total of 25 credits.) (Practicum) Pre: sixth-year standing in the Doctor of Pharmacy program or permission of instructor. First offered fall 1995. Owens and Staff

Philosophy (PHL)

Chairperson: Professor G. Johnson

- 101 Logic: The Principles of Reasoning (I or II, 3) Introduction to logic, presentation of evidence in basic valid argument forms. Emphasis on effective communication by considering such topics as definitions and avoidance of fallacies. (Lec. 3) Staff (C)
- 103 Introduction to Philosophy (I or II, 3) Pursues such basic questions as: What is a person? What is knowledge? Are we free? What is moral right and wrong? Does God exist? What is the meaning of death? (Lec. 3) Not open to students with 9 or more credits in philosophy. Staff (L)
- 204 Theories of Human Nature (I or II, 3) An introduction to philosophical inquiry by critical examination of some major traditional and contemporary views of human nature as expressed in a variety of religious, literary, scientific, and philosophical writings. (Lec. 3) Johnson (L)
- 210 Women and Moral Rights (1 or 11, 3) An introduction to the philosophical problems raised by reproduction, affirmative action, pornography, gender roles, and sexism in language through a critical examination of these issues. (Lec. 3) Pasquerella (L)
- 212 Ethics (I or II, 3) Evaluation of major ethical theories. Application of moral reasoning to topics such as virtue and vices, human dignity, conscience, responsibility, moral dilemmas, and reasons to be moral. (Lec. 3) Schwarz, Pasquerella, or Staff (L)
- 217 Social Philosophy (1 or 11, 3) A systematic introduction to the philosophical problems of contemporary social relations: models of community, sources of alienation, property and ownership, the meaning of work and technology, human rights and freedom. (Lec. 3) Johnson or Staff (L)
- 235 Modern Thought: Philosophy and Literature

See Comparative Literature Studies 235.

314 Ethical Problems in Society and Medicine (I or II, 3) Ethical analysis of topics such as war, capital punishment, sexual morality, suicide, animal rights, honesty and deception, world hunger, discrimination, abortion. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. Schwarz, Pasquerella, or Staff (L)

- 318 Recent Philosophers of Socialism (1 or II, 3) Philosophical issues regarding money, property, and the human condition, mainly from the perspective of a spectrum of socialists and their critics, including Thoreau, Marx, Buber, Dewey, Sartre, and Solzhenitsvn. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. Johnson (L)
- 319 Philosophy of History (1, 3) Examination of central philosophical problems raised by the discipline of history: truth and fact in history, historical explanation and understanding, permanence and change in social time. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. Johnson (L)
- 321 Ancient Philosophy (I and II, 3) Survey of major thinkers and schools of thought in Ancient Greece, including selected pre-Socratics, Plato, and Aristotle. (Lec. 3) Zeyl (F) (L)
- 322 Medieval Philosophy (1, 3) Survey of major thinkers and schools of thought in the Middle Ages, including Augustine, Anselm, Aguinas, and Ockham. (Lec. 3) Peterson or Staff (F) (L)
- 323 Modern Philosophy (1, 3) Survey of major thinkers and schools in modern times, including Descartes, Locké, Berkeley, Hume, Leibnitz, Spinoza, Kant, and Hegel. (Lec. 3) Peterson or Staff (F) (L)
- 324 Recent European Philosophy (II, 3) A study of European philosophy from 1840 to present. British and Continental developments are discussed and analyzed, including such movements as utilitarianism, idealism, logical atomism, positivism, existentialism, and phenomenology. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. Johnson or Staff (L)
- 325 American Philosophy (I or II, 3) A study of American philosophy including such movements as puritanism, transcendentalism, pragmatism, naturalism, process-philosophy, realism, and philosophical analysis. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. Peterson (L)
- 328 The Philosophy of Religion (I and II, 3) A systematic and critical consideration of such topics as the existence and nature of God, the problem of evil, the relation of faith to reason, religious language, miracles, and immortality. (Lec. 3) Pre: 101 ar 103 or one 200-level course or permission of instructor. Zeyl or Staff (L)
- 331-East Asian Thought (I or II, 3) A study of the important philosophical and religious systems of China, Korea, and Japan; emphasis on Chinese traditions. (Lec. 3) Kim (F) (L)

- 341 Introduction to Metaphysics (1 or 11, 3) Analyzes topics such as person, mind-body, human action, freedom and determinism, causation, time, space, essence and existence, universals, and types of beings. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor, Pasquerella, Peterson, or Schwarz
- 342 Knowledge, Belief, and Truth (1 or II, 3) Analysis of topics such as knowledge, belief, certainty, doubt, skepticism, faith, the ethics of belief, truth, error, perception, a priori knowledge, subjectivity and objectivity, and memory. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor, Wenisch, Schwarz, or Staff
- 346 Existential Problems in Human Life (1 or 1). 3) Discussion of ultimate questions of human existence such as meaning in life, personal commitment, human relations, suffering, despair, hope, freedom, authenticity, self-deception, death, God, and immortality. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. Foster (L)
- 355 Philosophy of Art (I or II, 3) Systematic problems arising from reflection on the creation and perception of works of art. (Lec. 3) Pre: 101 or 103 or one 200-level course or permission of instructor. Foster (L)
- 401, 402 Special Problems (I and II, 3 each) Course may vary from year to year, allowing one or more advanced students to pursue problems of special interest with guidance of instructor in conferences. One or more written papers. (Independent Study) Pre: 3 credits in philosophy and permission of instructor. May be repeated for credit. Staff
- 414 Advanced Studies in Ethics (I or II, 3) Intensive studies of various issues, theories, and aspects in the field of ethics. Texts of leading moralists will be carefully analyzed. Specific subject may change from year to year. (Seminar) Pre: 212 and one 300-level course. In alternate years. Staff
- 430 Philosophy of Law (I or II, 3) Critical evaluation of the basis of legal authority and legal decision making, covering topics in the areas of analytic and ethical jurisprudence as well as professional ethics for lawyers. (Lec. 3) Pre: 101 or 103 or one 200-level PHL course, and one 300level PHL course, or permission of instructor. Pasquerella
- 440 Philosophy of Language (I or II, 3) Language in its relation to the world, cognitive and noncognitive functions of language, and philosophical issues in the area of communication. Works of Wittgenstein, the logical positivists,

- linguistic analysts, and other contemporary thinkers, (Lec. 3) Pre: 101 or 103, and one 300level PHL course. Staff
- 451 Symbolic Logic (I or II, 3) Selected topics in modem symbolic logic including calculus of propositions, predicate calculus, and modal logics. Philosophical and mathematical aspects of the subject. (Lec. 3) Pre: 101 or MTH 131 or higher or permission of instructor. Kowalski
- 452 Philosophy of Science (1 or II. 3) Analysis of the nature and structure of scientific thought. Consideration of issues such as structure and types of scientific explanation, verification and falsification, and unity of the sciences. (Seminar) Pre: 101 or 451, one 300-level PHL course, and 6 credits of natural science; or permission of instructor. Kowalski
- 453 Philosophy of the Social Sciences (II, 3) Examination of philosophical problems raised by contemporary social sciences: the meaning of scientific knowledge, the nature of understanding of other persons and cultures, the relation of theory and practice. (Seminar) Pre: 101 or 103 or 204 or permission of instructor. Johnson
- 502, 503 Tutorial in Philosophy (I and II, 3) each) Discussion by the staff and advanced students of research problems in philosophy. Presentation and criticism of original papers. (Independent Study) Pre: graduate standing or permission of instructor. May be repeated for a maximum of 9 credits. Staff
- 513 General Axiology (I or II, 3) Intensive historical and systematic study of issues such as the nature and kinds of values, their ontological status, their relation to culture, their relation to emotions, relation of axiology to other disciplines. (Seminar) Pre: graduate standing or permission of instructor. In alternate years. Wenisch or Staff
- 530 Philosophy of Plato (1 or II, 3) Selected dialogues from the later period. Particular attention will be given to the areas of metaphysics, epistemology, cosmology, and ethics. (Seminar) Pre: graduate standing or permission of instructor. In alternate years. Zeyl
- 531 Philosophy of Aristotle (I or II, 3) Selected texts with emphasis on the major concepts of Aristotle's metaphysics, theory of knowledge, and ethics. (Seminar) Pre: graduate standing or permission of instructor. In alternate years. Zeyl
- 542 Advanced Studies in Patristic and Scholastic Philosophy (1 or II, 3) Intensive studies of one or more thinkers belonging to the patristic or scholastic tradition. The specific subject may

change from year to year. (Seminar) Pre: graduate standing or permission of instructor. In alternate years. Peterson

551 Philosophical Logic (1 or II, 3) Intensive consideration of such issues as the nature, structure, and function of propositions, predication, analysis of the "is" relation. Relation between proposition and facts. Nature of logic and criterion of the logical, relation of logic to language, psychology, and ontology. (Seminar) Pre: graduate standing or permission of instructor. In alternate years. Kowalski or Staff

555 Philosophy of the Arts and of Literature (I or II, 3) An intensive study of one or more thinkers concerned with philosophical problems arising from our experience of the arts and of literature. The phenomenological tradition will be stressed. (Seminar) Pre: graduate standing or permission of instructor. In alternate years. Foster or Staff

570 Philosophy of Immanuel Kant (1 or II, 3) Intensive analysis of major texts. Special attention will be given to The Critique of Pure Reason. (Seminar) Pre: graduate standing or permission of instructor. In alternate years. Peterson or Staff

580 Nineteenth-Century Philosophy (1 or 11, 3) Intensive analysis of the work of a major philosopher or philosophical movement. Attention will be given to such major figures as Hegel, Kierkegaard, C.S. Peirce, or James. The specific subject changes from year to year. (Seminar) Pre: graduate standing or permission of instructor. In alternate years. Foster, Johnson, or Staff

582 Advanced Studies in Contemporary Philosophy (I or II, 3) Intensive studies of one or more thinkers of philosophical movements of the twentieth century. The specific subject may change from year to year. (Seminar) Pre: graduate standing or permission of instructor. In alternate years. Johnson or Staff

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Physical Education (PED)

Co-Chairpersans: Associate Professor O'Leary and Associate Professor Seleen (Physical Education and Health)

105 Beginner Elective Activity I: Individual and Dual Sports (I or II, 1) Beginning level of instruction for students with little or no previous experience in the activities offered. Select appropriate letter for activity desired; e.g., 105A Beginning Archery. (Studio 3) Staff

A Archery M Tennis B Badminton N Track and Field C Biking and Hiking P Marksmanship D Bowling S Activities for Children E Canoeing T Handball F Fencing W (or MSC) Weight G Golf Training and **H** Gymnastics Conditionina 1 Sailing Y Modern Gymnastics K Skiina Z Paddleball

106 Activity II: Team Sports and Group Activities (I or II, 1) Beginning level of instruction for students with little or no previous experience in the activities offered. Select appropriate letter for activity desired. (Studio 3) Staff

L Slimnastics

A Folk and Square Dance L Soccer H Basketball M Softball I Flag Football N Volleyball J Field Hockey P Campcraft K Lacrosse

The above activities may be offered in combination or as a single activity for the entire semester.

115 Team Sports (I or II, 0.5) Emphasis on analysis of skills, strategies, class organization, and teaching techniques. Select appropriate letter for activity desired. (Studio 3) Open to physical education majors only. Staff

A Basketball E Lacrosse B Field Hockey F Soccer G Softball C Flag Football D Recreational Sports H Volleyball

120 Weight Training and Physical Conditioning (I and II, 1) Principles of weight training and conditioning with emphasis on constructing individual and group exercise programs. (Studio 3) Open to physical education majors only. Staff

130 Beginning Swimming (I and II, 1) Beginning level of instruction for students with little or no previous experience. (Studio 3) Staff

131 Beginning Ballet (I and II, 1) Introduction to the classical ballet barre. Practical experiences include center work, adagio, allegro, and simple combinations performed on the diagonal. (Studio 3) Marsden

133 Intermediate Ballet (I and II, 1) A continuation of basic skills acquired at beginner level designed to increase strength necessary to execute more complicated variations. Extended sequences, more elaborate in their technique. (Studio 3) Marsden

135 Senior Citizens Aquatics (I and II, 1) An aquatic program for individuals, age 60 and older. Activities include exercise, swimming instruction, and endurance swimming. (Studio 3) S/U credit. Seleen

205 Intermediate Elective, Activity 1 (I and II, 1) Intermediate level of instruction for those students who have acquired the basic skills and have performing experience in the activity. All activities listed under 105. (Studio 3) Staff

206 Intermediate Elective, Activity II (I and II, 1) Intermediate level of instruction for those students who have acquired the basic skills and have performing experience in the activity. All activities listed under 106. (Studio 3) Staff

215 Individual Sports (I or II, 0.5) Emphasis on analysis of skills, strategies, class organization, and teaching techniques. Select appropriate letter for activity desired. (Studio 3) Open to physical education majors only. Staff

E Golf A Archery **B** Badminton F Tennis C Bowling G Wrestling D Fencing

217 Field Experience in Physical Education, Health, and Recreation (I and II, 1) Students assist in one of the following: community agency, public or private school program, summer camp or recreation program, special education program. (Practicum) Pre: permission of chairperson. May be repeated but with different agency. S/U credit. Staff

222 Basic Gymnastics and Tumbling (I or II, 1) Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills of apparatus and tumbling with special emphasis on teaching and safety procedures. (Studio 3) Open to physical education majors only. Staff

230 Intermediate Swimming (I and II, 1) Intermediate level of instruction for those students who have acquired the basic skills and have performing experience in swimming. (Studio 3) Staff

233 Classical Ballet: Advanced (I and II, 1) Advanced level of instruction for students who have acquired intermediate skills and have performing experience in ballet. (Studio 3) Pre: 131 and 133, Marsden

234 Ballet: Pointe and Variations (I and II, 1) Beginner pointe for the advanced student in ballet. Emphasis on barre work and variations in the center. (Studia 3) Pre: 233 or permission of instructor. Marsden

- 235 Classical Ballet: Pas de Deux (1 and II, 1) Pas de Deux emphasizes the application of the academic rules of classical ballet combined with consideration and respect for the partner. (Studio 3) Pre: 234 or permission of instructor. Marsden
- 243 Prevention and Care of Athletic Injuries and First Aid (1, 3) Conditioning, use of physiotherapy equipment, massaging, taping and bandaging technique. Latest American Red Cross procedures with the opportunity to receive standard certification. (Lec. 3) Open to physical education majors only. Bissonette
- 251 Folk and Square Dance (1, 1) Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills. (Studio 3) Open to physical education majors only.
- 263 Principles of Athletic Coaching (I and II, 3) Principles of exercise physiology, leadership, and psychology applied to athletic coaching. Includes materials on administration of athletics. (Lec. 3) Norris and Staff
- 270 Introduction to the History and Philosophy of Physical Education (I and II, 3) Historical development of physical education as an integral part of education and as a profession from ancient times to the present. Emphasis on development of educational philosophies within physical education and basic to current interpretations of the theory and practice of physical education. (Lec. 3) Nedwidek and Cohen
- 275 Physical Fitness Appraisal and Guidance (I and II, 3) Principles of exercise, components of cardiorespiratory fitness, weight and tension control. Exercise testing, assessment of individual interests and needs. Development of exercise program to achieve individual goals with subsequent re-evaluation. (Lec. 2, Lab. 2) Staff
- 280 Introduction to Recreation and Leisure Studies (1, 3) Development of recreation from a historical and cross-cultural perspective. Emphasis on the role of leisure in a community setting through study of the relationships of play, recreation, and leisure. (Lec. 3) O'Leary
- 295 Physical Education in Elementary Schools (I and II, 3) Techniques, including the use of audiovisual materials, used in conducting a program of physical education for elementary school children. Types of activities found in the basic program and progressions in planning for various age groups will be stressed. (Lec. 2, Lab. 2) Pre: 285. Crooker

- 310 Principles of Human Motor Development (1, 3) Overview of the principles of motor development for the physical education teacher. Examines human motor development across the life span with emphasis on assessment and program development. Includes basic principles of motor learning. (Lec. 3) Pre: admission to the teacher education program and PSY 232 or HDE 200; or permission of chairperson. O'Donnell and
- 314 Methods of Teaching Health and Physical Education (I and II, 3) Comprehensive review of the methods and materials essential in teaching health and physical education with emphasis on the application of interdisciplinary approaches and learning theories. (Lec. 3) Pre: 295. Clegg
- 315 Assisting in Physical Education (I and II, 1) Each student must include one unit of assisting in the department activity program (105, 106, 205, 206). (Practicum) Pre: 314 or permission of chairperson. May be repeated for credit in different activity or level. Clegg
- 321 Track and Field (I and II, 1) Techniques and acquisition of basic skills. Includes theory and analysis of basic through advanced skills, strategies, and officiating. (Studio 3) Open to physical education majors only. Copeland
- 324 Rhythmic Analysis and Accompaniment (1, 2) Special emphasis on rhythmic and kinesthetic factors in movement. Use of various types of instruments for dance accompaniment with practical experience in the accompaniment of dance. (Studio 3) Cohen
- 325 Physical Fitness and Wellness Assessment (1, 3) Theory and application of physical fitness and wellness assessments with focus on appropriate test selection and performance. Emphasis on practical skills of test administration. (Lec. 3) Pre: 275. Lamont and Staff
- 330 Life Saving (I and II, 1) (Studio 3) Staff
- 340 Water Safety Instructor (I and II, 2) (Lec. 1, Lab. 2) Staff
- 341 Techniques of Officiating I (I, 3) Presentation of current methods and techniques of officiating selected fall team sports. Provides necessary training and practical experience for students. (Lec. 2, Lab. 2) Norris and Staff
- 342 Techniques of Officiating II (II, 3) Presentation of current methods and techniques of officiating selected spring team sports. Provides necessary training and practical experience for students. (Lec. 2, Lab. 2) Norris and Staff

- 343 Advanced Athletic Training: Recognition of Athletic Injuries (1, 3) Development of advanced diagnostic techniques for recognizing and evaluating athletic injuries. Development of advanced techniques for protection of athletic injuries. (Lec. 3) Pre: 243. Bissonette
- 344, 345 Field Experience in Athletic Training I, II (I and II, 3 each) Laboratory participation under training room conditions involving specific techniques in the prevention, protection, and emergency care of athletes participating in intercollegiate and intramural athletics. Supervised field practicum, 150 hours. (Practicum) Pre: 243 or permission of chairperson for 344; 343 and 344 or permission of chairperson for 345. Nedwidek
- 346 Skin and Scuba Diving, Beginners* (1, 2) Emphasis on basic physical principles, hazards, selection of equipment, and techniques, (Lec. 1, Lab. 2) Pre: permission of instructor, McAniff
- 347 Skin and Scuba Diving, Advanced* (II, 2) Emphasis on the skill needed for advanced scuba activities as related to deep dives, salvage. (Lec. 1, Lab. 2) Pre: 346. McAniff
- 355 Coaching of Soccer (I or II, 2) Techniques and acquisition of fundamental skills. Includes advanced tactics and strategy, analysis of individual and team play, officiating, and planning of training schedules. (Lec. 1, Lab. 2) Pre: 263 or permission of instructor, Staff
- 362 Coaching of Track and Field (II, 2) Theory, techniques, and practice in coaching of track and field. (Lec. 2, Lab. 2) Pre: 263 or permission of instructor, Staff
- 364 Coaching of Baseball (1, 2) Theory, techniques, and practice in coaching baseball. (Lec. 2, Lab. 2) Pre: 263 or permission of instructor. Norris
- 369 Tests and Measurements (I and II, 3) The place of testing in the physical education curriculum. Includes analysis of data, marking systems, and overview of existing tests and measures. (Lec. 3) Sonstroem and Clegg
- 370 Kinesiology (I and II, 3) Human motion based on anatomical, physiological, and mechanical principles. Emphasis on application of these principles to fundamental movements and physical education activities. Includes electromyographic analysis of physical skills. (Lec. 3) Pre: ZOO 121. Staff
- 375 Women in Sport: Contemporary Perspectives (II, 3) Survey of issues relating to gender, herstory, governance, physiology, psychology,

economics, diversity, and the institutionalization of women involved in sport. (Lec. 3) Cohen

- 380 Organization and Administration of Physical Education (I and II, 3) Techniques, methods, and systems used in organizing and administering physical education programs in public and private institutions. (Lec. 3) Polidoro and Nedwidek
- 382 Sport Psychology (I or II, 3) Survey of major topics in sport psychology including attention in sport, anxiety and arousal, aggression, self-esteem, team cohesiveness, leadership, youth participation, and gender in sport. (Lec. 3) Pre: admission to the teacher education program and PSY 113, or permission of chairperson. Sonstroem and Staff
- 384 Coaching of Football (1, 2) Theory, techniques, and practice in coaching football. (Lec. 2) Pre: 263 or permission of instructor. Nedwidek
- 386 Coaching of Basketball (1, 2) Theory, techniques, and practice in coaching basketball. (Lec. 2, Lab. 2) Pre: 263 or permission of instructor. Staff
- 391 (or HLT 391) Directed Study (I and II, 1-3) Development of an approved project supervised by a member of the department faculty. (Independent Study) Pre: junior standing and permission of chairperson and instructor. Staff
- 410 Corrective and Adapted Physical Education (I and II, 3) Evaluation and planning of programs in physical education adapted to the needs of atypical individuals. Application of anatomical and mechanical principles in detection and correction of faulty development and body mechanics. Emphasis on technological assessment and relationship to the medical field. (Lec. 2, Lab. 2) Pre: 370 or permission of chairperson. Staff
- 416 Aging and Leisure (I or II, 3) The aging process and its impact on leisure pursuits and recreation programming for older adults. Assessments of researching needs; program adaptation; fitness benefits; and retirement planning. (Lec. 3) Pre: junior or senior standing. In alternate yeors. Seleen
- 425 Fitness and Wellness Program Development (II, 3) Practice and principles in the development of fitness and wellness programs. Includes interpretation of fitness and wellness screening, application of exercise and wellness prescriptions, program leadership, development, and administration. (Lec. 3) Pre: 325 and ZOO 343. Not for graduate credit. Lamont

- 430 Adapted Aquatics (1, 3) Planning, administering, and teaching adapted aquatics. Specific theory and methods of teaching swimming to the handicapped. American Red Cross Certificate in adapted aquatics, if current Water Safety Instruction (WSI) certificate is held. (Lec. 2, Lab. 2) Pre: WSI certificate or comparable skill as determined by instructor. Staff
- 443 Advanced Athletic Training: Rehabilitation of Athletic Injuries (II, 3) Advanced learning in reconditioning of athletic injuries. Includes learning the use of mechanical, electrical, cryo-, hydro-, and drug therapy. Athletic training administration included. (Lec. 3) Pre: 343 or permission of chairperson. Not for graduate credit in physical education. Staff
- 484 (or HLT 484) Supervised Field Work (I and II, 6-12) Supervised field work in health, physical education, or recreation in community and/ or commercial agencies. (Practicum) Not for teacher certification or graduate credit. Seleen
- 486 (or HLT 486) Field Experience Seminar (/ and II, 3) Seminar for students completing field work in health, physical education, or recreation. Topics include identification of problems, resource materials, and discussions of future career concerns. (Seminar) Pre: concurrent enrollment in 484. Not for graduate credit in physical education. Seleen

Note: Student teaching includes practicum in both elementary and secondary schools under the supervision of the departmental staff. See EDC 485, 486, 487, 488, and 489.

- 510 Current Issues in Physical Education, Health, and Recreation (1 or 11, 3) Designed to develop student awareness of contemporary situations that are of concern to the above professions. Extensive review of contemporary literature. Critical analysis of selected issues, their components and effects. (Lec. 3) Pre: permission of instructor, Polidoro
- 520 Curriculum Construction in Physical Education (I or II, 3) Analysis of criteria and procedures for curriculum construction in physical education. Standards for the evaluation and revision of elementary and secondary school physical education courses. (Lec. 3) Pre: permission of instructor. Staff
- 525 Comparative Physical Education and Sport (I or II, 3) Examination of the status and practice of sport and physical education in selected countries. Emphasis on comparative analyses in developed and third world countries. (Lec. 3) Pre: graduate standing or permission of instructor. Polidoro

- 526 Sport and International Relations (I or II, 3) An examination of the role that sport plays in promoting international relations. Special lectures, readings, library research on topics relating to sport and international relations. (Lec. 3) Pre: graduate standing or permission of instructor. Polidoro
- 530 Research Methods and Design in Health and Physical Education (I or II, 3) Introduction to methodology in experimental, laboratory, curriculum, action, and historical research. (Lec. 3) Pre: competence in basic statistics and permission of instructor. Sonstroem and O'Donnell
- 531 Advanced Experimental Techniques in Physical Education (II, 3) In-depth analysis of research studies in the field. Advanced research technique studied and applied to problems in physical education. (Lec. 3) Pre: 530 or permission of instructor. Sonstroem
- 540 Planning and Supervision of Recreational and Athletic Facilities (1, 3) Examination of the factors involved in the construction and/or renovation of facilities for most efficient multipurpose use and maintenance. Course includes field trips. (Lec. 3) Pre: junior standing and permission of chairperson. O'Leary
- 550 Administration of Physical Education (I or II, 3) Problems and procedures for administering a physical education program studied from the viewpoint of the physical education administrator, the school administrator, and the faculty. Emphasis is placed on the study of administrative cases. (Lec. 3) Pre: 380 or permission of instructor. Nedwidek or Polidoro
- 551 Sport and Recreation Operations (I or II, 3) Analysis of operational problems and policies associated with interscholastic, intercollegiate, professional, community, and commercial sports enterprises. (Lec. 3) Pre: 380 or graduate standing. Nedwidek
- 552 Supervision of Physical Education and Health Instruction (I or II, 3) Principles, techniques, and procedures involved in effective supervision of physical education and health instruction, with emphasis on the leadership role of the supervisor in the improvement of instruction. Pre: graduate standing or permission of instructor. (Lec. 3) Nedwidek

^{*} This course requires a physical examination at the student's expense administered by a physician with special expertise in this area. Please contact Health Services for a reference to an approved physician prior to July 1 for enrollment in the fall semester and November 1 for enrollment in the spring semester.

559 Principles of Exercise Testing and Interpretation (I or II, 3) Theory and practical application of exercise testing and interpretation. Includes information on testing of athletes as well as clinical testing and interpretation. (Lec. 3) Pre: ZOO 343 or permission of instructor. Manfredi or Staff

560 (or HLT 560) Seminar in Health, Physical Education, and Recreation (I or II, 3) Selected topics within the three areas, depending on availability of specialized instruction including visiting professorship. (Seminar) Pre: permission of instructor, Staff

562 Advanced Exercise Physiology (1 or 11, 3) Advanced study of the physiological factors limiting physical performance and work capacity with emphasis on the effects of physical conditioning on health and fitness. (Lec. 3) Pre: ZOO 343 or permission of instructor, Manfredi

563 Fitness Programs for the Middle-Aged and Elderly (1 or 11, 3) Provides the professional physical educator with an in-depth knowledge of scientific principles applicable to the administration of adult physical fitness programs. Client characteristics, screening, program supervision, liability, recruitment, and adherence. (Lec. 3) Pre: graduate standing or permission of instructor.

564 Physiology of Aging (1 or II, 3) Library searches, reports, and discussion of topics of current research on the physiology of aging. Subject matter adapted to meet interests of staff and students. (Lec. 3) Pre: ZOO 242 or permission of instructor. Manfredi

565 Cardiovascular Rehabilitation (1 or 11, 3) Focus on cardiac rehabilitation, underlying pathology and pathophysiology, diagnostic and prognostic testing, and principles of rehabilitation. Special emphasis on exercise intervention and lifestyle change. (Lec. 3) Pre: ZOO 343 or permission of instructor. Manfredi or Staff

575 Principles of Motor Learning (1 or 11, 3) Study of processes and conditions involved in the learning of motor skills. Includes contemporary models of skill learning with emphasis on developmental, environmental, and individual factors that influence skill acquisition. (Lec. 3) Pre: EDC 312 or equivalent and graduate standing. Staff

578 Sport in American Culture (1 or 11, 3) A survey of contemporary themes relating to the study of human behavior in sports contexts in American culture. (Lec. 3) Pre: graduate standing or permission of instructor. Cohen

580 Physical Education: Mentally Retarded and Learning Disabled (I or II, 3) Contributions of physical education to the growth and development of the mentally retarded and learning disabled. Theoretical and practical aspects of programs to best serve their individual needs. (Lec. 3) Pre: permission of instructor, Staff

581 (or PSY 581) Psychological Aspects of a Healthy Lifestyle (1 or 11, 3) Psychosocial variables involved in health maintenance and recovery from disease with emphasis on compliance in exercise. A review of models and research identifies client needs and counseling methods. (Lec. 3) Pre: graduate standing, PSY 113 and 232, or permission of instructor. Sonstroem

582 Sport Psychology (I or II, 3) Counseling and psychotherapeutic techniques to improve athletic performance. Considers needs of the athlete arising from competitive stress, staleness, failure, team structure, and interactions. (Lec. 3) Pre: graduate standing, PSY 113 and 232, or permission of instructor. Sonstroem

585 Adapted Physical Activities for Special Populations (1, 3) Characteristics and needs for special populations: retarded, emotionally disturbed, learning disabled, sensory impaired, and obese. Adapted activities based on individual needs. Effects of federal legislation on programs discussed. (Lec. 3) Pre: permission of instructor. Staff

591 (or HLT 591) Special Problems (1 or 11, 3) Written paper reporting an in-depth investigation of a pertinent problem in the field, including a review of relevant literature, analysis, and solution of the problem based on scientific methodology, with recommendations for improved practices. (Independent Study) Limited to and required of all graduate students in physical education who elect the nonthesis option. Staff

592 (or HLT 592) Internship in Physical Education (1, 11, or SS, 3) Directed field experience under the supervision of a faculty member and a professional staff member of the cooperating institution. Application of knowledge, synthesis of practical experiences. Paper required. (Practicum) Pre: a minimum of 12 graduate credits in physical education and permission of major professor and chairperson. Staff

595 (or HLT 595) Independent Study (I or II, 3) Development of an approved project supervised by a member of the graduate faculty. (Independent Study) Pre: permission of chairperson and instructor. May not be substituted for 591 or 599. Staff

599 (or HLT 599) Master's Thesis Research (/ and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit. Staff

Physical Therapy (PHT)

Director: Associate Professor Rowinski

Note: Following are upper-level undergraduate courses that are required for students admitted to the moster's degree program in physical therapy. Physical therapy is not offered at the undergraduate level; students must have a bachelor's degree to gain admission to this program.

410 Human Anatomy and Histology (i, 5) Study of the structure of the human body, supplemented by microscopic anatomy and by dissection laboratories. Emphasis on musculoskeletal, neural, and cardiovascular systems in preparation for physical exam and therapeutic exercise. (Lec. 3, Lab. 6) Pre: ZOO 121, 242, admission to physical therapy program, or permission of instructor. Agostinucci

412 Basic Physical Evaluation, Therapeutic Exercise, and Care (1, 3) Surface anatomy, range of motion, reflex, and manual muscle testing methods of the physical examination are presented. Soft tissue evaluation and introduction to therapeutic exercise prescription are provided to initiate the student's experience of therapeutic care provision. (Lec. 2, Lab. 3) Pre: admission to physical therapy program or permission of instructor. Staff

413 Applied Anatomy (1, 1) Location and functional relevance of anatomical structures of the musculoskeletal, neural, and cardiovascular systems are demonstrated on intact, living humans. Palpation and kinesiological analysis skills are developed through laboratory sessions. (Lec. 1, Lab. 2) Pre: admission to physical therapy program or permission of instructor. Keegan

417 Psychosocial Needs of the Disabled (1, 2) The physical therapist's role in addressing the psychosocial needs of the patient and family resulting from movement disorders. Reaction to illness and disability and the need to consider particular religious, cultural, social, and economic differences. (Lec. 2) Pre: admission to physical therapy program or permission of instructor. Roush

418 Professional and Community Practices in Physical Therapy (I and II, 1) Introduction to relation of physical therapy practice to the community health care delivery systems. Organization of hospital departments, private practices, and other specific clinical settings is elucidated to initiate student's professional socialization. (Practicum) Pre: admission to physical therapy program or permission of instructor. Roush

- 420 Physiological Basis of Physical Therapy (I, 3) A comprehensive study of the physiological mechanisms, adaptations, and measurement principles which guide therapeutic evaluation and treatment. Laboratory demonstrations and experiences introduce the student to quantification of physiological change in humans. (Lec. 2, Lab. 3) Pre: 410 or permission of instructor. Rowinski
- 422 Pathophysiology and Medical Management of Movement Disorders (II, 3) Exploration of physiological regulation in disease states, with an emphasis on total medical management of disorders affecting human movement. Role of the therapist in interacting with various other medical and paramedical professionals is presented. (Lec. 3) Pre: ZOO 242, admission to physical therapy program, or permission of instructor. Roush
- 430 Human Neurosciences and Neurology (II, 4) Anatomy, physiology, dysfunction, and evaluation of the human nervous system as a basis of therapeutic intervention. Gross and microscopic structure of the nervous system and the neurological examination. (Lec. 3, Lab. 3) Pre: ZOO 121, 242, admission to physical therapy program, or permission of instructor. Agostinucci
- 440 Advanced Head and Neck Anatomy See Dental Hygiene 440.
- 510 Biomechanics and Pathokinesiology (II, 3) Principles, theories, and recent investigations of the biomechanics of human motion and posture are presented to develop analytical skills for normal and abnormal movement evaluation. (Lec. 2, Lab. 3) Pre: 410, 412, 420, or permission of instructor. Blanpied
- 513 Directed Study in Physical Therapy (I, II, and SS, 1-3) Subject matter arranged to meet the individual needs of graduate students in physical therapy under the supervision of staff. (Independent Study) Pre: permission of instructor. Staff
- 515 Research Methods in Physical Therapy (1, 3) Research design and methods in current physical therapy theory development and scientific literature. Preparation of a research proposal through review of literature and pilot study of selected research methods are required. (Lec. 3) Pre: credit or concurrent enrollment in STA 307 or equivalent and second-year

standing in physical therapy or permission of instructor. Roush and Blanpied

- 518 Ethical, Legal, and Interdisciplinary Issues of Clinical Practice (1, 2) Standards, ethical considerations, and legal implications of physical therapy practice. Communication with other health care disciplines and governmental agencies for the provision, progression, and implementation of physical therapy services. (Lec. 2) Pre: second-year standing in physical therapy or permission of instructor. Roush
- 525 Research Projects in Physical Therapy 1 (1, 3) Development of an investigation into some problem of basic or applied physical therapy science. Case studies, preliminary data, or survey instruments are compiled, and a review of related literature is accomplished under guidance of faculty. (Independent Study) Pre: 515, thirdyear standing in physical therapy, or permission of instructor, Staff
- 528 Professional Practice and Administration (II, 3) Responsibilities of the physical therapist in supervising personnel and establishing therapeutic practice in hospital, out-patient, and private settings. Department planning, personnel development, cost accounting and billing, standards of practice, and quality assurance are discussed. (Lec. 3) Pre: second-year standing in physical therapy or permission of instructor. Roush
- 532 Physical Agents and Instrumentation in Physical Therapy (II, 4) Theory, clinical investigations, and current research regarding the application of physical therapeutic energies and agents. Direct treatment techniques and supervision of support personnel in the administration of mechano-, electro-, thermo-, hydro-, ionto-, and phototherapy. (Lec. 3, Lab. 3) Pre: 420, second-semester standing in physical therapy, or permission of instructor. Rowinski
- 535 Research Project in Physical Therapy II (II, 3) Completion of investigation into some problem of basic or applied physical therapy science. Data gathering is completed, results are summarized, and conclusions relating findings to previous studies are formulated. (Independent Study) Pre: 525 or permission of instructor. Staff
- 538 Professional Problems and Public Relations (1, 2) Current problems in professional practice including legislative, educational, and interdisciplinary topics. Issues relating to consumers of physical therapy services and methods of marketing the services of physical therapists are elaborated. (Lec. 2) Pre: third-year standing in physical therapy or permission of instructor. Romeo

- 540 Human Motor Development and Learning (1, 3) Development and maturation of the human nervous system forms the basis for clinical considerations of developmental disabilities and motor learning. Theories of motor skill acquisition and therapeutic interventions for neuromuscular problems of the infant, child, adolescent, and adult. (Lec. 2, Lab. 3) Pre: 410, 430, second-year standing in physical therapy, or permission of instructor. Robinson
- 542 Clinical Diagnosis (I, 2) Modern medical and therapeutic diagnostic methods are presented to develop competencies in referral and evaluation of disorders. Medical and pharmacological science topics pertaining to physical therapy diagnoses are presented by invited lecturers. (Lec. 2) Pre: second-year standing in physical therapy or permission of instructor. Rowinski
- 550 Orthopaedic Physical Therapy (1, 3) Physical evaluation and treatment techniques of the human muscular, articular, and skeletal systems related to orthopaedic conditions. Rehabilitation of injured, congenitally dysfunctioning, surgically intervened patients, and patients with conditions at risk for dysfunction. (Lec. 2, Lab. 3) Pre: 410, 412, 420, 510; second-year standing in physical therapy or permission of instructor. Blanpied
- 552 Functional Rehabilitation and Advanced Therapeutic Exercise (II, 3) Patient care techniques and programs related to the restoration of functional motor activities are provided through specification of treatment protocols, assistive devices, therapeutic apparatus, and therapeutic exercise programs. Competency is developed by simulating actual clinical conditions. (Lec. 2, Lab. 3) Pre: 550 or permission of instructor. Blanpied and Agostinucci
- 555 Seminar in Physical Therapy (I, II, or SS, 1-3) Group exploration of advanced topics in physical therapy through study of recent literature and investigations. Detailed research reviews, clinical cases, and reports are brought to discussion. (Seminar) Pre: graduate standing and permission of instructor or director. May be repeated with different topic for a maximum of 6 credits. Staff
- 560 Neurological Physical Therapy (II, 3) Physical therapy for the neurologically disabled patient. Proprioceptive neuromuscular facilitation, neurodevelopmental, sensory-motor integration, other patterned stimulation and evaluation techniques with emphasis on stroke, spinal cord injury, and other disabling conditions of the nervous system. (Lec. 2, Lab. 3) Pre: 430,

ZOO 242, second-year standing in physical therapy, or permission of instructor. Robinson

570 Cardiopulmonary Physical Therapy (II, 3) Physiological basis, testing and evaluation, treatment, and administration of programs for cardiac and pulmonary-diseased patients requiring physical therapy. (Lec. 2, Lab. 3) Pre: 420, 422, second-year standing in physical therapy, ar permission of instructor, Robinson

574 Sports Physical Therapy (II, 2) Advanced knowledge and competency in sports injury evaluation and treatment are developed. Additional coverage of sports injury prevention, athletic screening, medical intervention, interdisciplinary coordination, and patient or public education is provided. (Lec. 1, Lab. 3) Pre: 550 or permission of instructor. Blanpied and Perkins

575 Physical Therapy Internship I (I, II or SS, 5) Assignment to various clinical settings which provide supervised experiences with practicing physical therapists and support personnel. Specific setting and rotational time schedule is determined by the academic clinical coordinator and clinical staff. (Practicum) Pre: permission of instructor. Staff, ACCE

580 Pediatric and Geriatric Physical Therapy (1, 3) Specific problems of the maturing and aging patient population in physical therapy practice. Developmental disability programs and treatment programs in nursing facilities, treatment centers, and home programs for the aged patient population. (Lec. 2, Lab. 3) Pre: 430, 540, third-year standing in physical therapy. Robinson

585 Physical Therapy Internship II (I, II, and SS, 5) Assignment to various clinical settings which provide supervised experiences with practicing physical therapists and support personnel. Specific setting and rotational time schedule is determined by the academic clinical coordinator and clinical staff. (Practicum) Pre: permission of instructor. Staff, ACCE

590 General Practice Physical Therapy (1, 3) Problems and benefits associated with the business and conduct of different types of physical therapy private practice. Integration of the art and science of physical therapy with the delivery of services. (Lec. 3) Pre: 418, 528, third-year standing in physical therapy. Roush

595 Physical Therapy Internship III (I, II, and SS, 5) Assignment to various clinical settings which provide supervised experiences with practicing physical therapists and support personnel. Selection of clinical specialty area of

student's interest is considered in determination of the setting, (Practicum) Pre: permission of instructor. Staff, ACCE

Physics (PHY)

Chairperson: Professor Malik

101 Physics and Physicists (1, 1) Survey course spotlighting current developments in physics and examining the way scientific research is carried out. (Lec. 1) Letcher

109 Introduction to Physics (I and II, 3) Appreciation of the physical environment and an introduction to the principles and theories of contemporary physics. (Lec. 3) Pre: concurrent enrollment in 110. Not open to students with credit in 111, 112, 203, 204, 205, 213, or 214. Desiardins (N)

110 Laboratory for Introduction to Physics (I and II, 1) Demonstrations and laboratory exercises related to 109. (Lab. 2) Pre: concurrent enrollment in 109. Staff (N)

111, 112 General Physics I, II (I and II, 3 each) 111: Mechanics, heat, and sound. 112: Optics, electricity, magnetism, and modern physics. Noncalculus presentation of fundamental physics. Suitable for prospective teachers. (Lec. 3) Pre: concurrent enrollment in 185 and 186, Malik

130 Physics and Climatic Change (1 and II, 3) A qualitative presentation of physical principles used to describe atmospheric climate on global and smaller scales. Examination of the physical basis for climatic change. (Lec. 3) Hartt (N)

140 The Ideas of Physics (I and II, 3) A nonmathematical presentation of classical and modern physics illustrated by lecture demonstrations. (Lec. 3) Of particular interest to liberal arts students. Staff (N)

185, 186 Laboratory for General Physics I, II (/ and II, 1 each) Selected laboratory exercises applicable to materials in 111, 112. (Lab. 2) Pre: concurrent enrollment in 111 and 112. Staff (N)

203 Elementary Physics I (I and II, 3) Introduction to Newtonian mechanics. Kinematics and dynamics of particles and systems of particles. Motion of rigid bodies and oscillatory motion. Conservation principles. (Lec. 3) Pre: credit or concurrent enrollment in MTH 141 and concurrent enrollment in 273. Intended for science or engineering majors. Not open to students with credit in 213. Staff

204 Elementary Physics II (I and II, 3) Introduction to electricity and magnetism, leading to Maxwell's equations, Electric fields and Gauss' law: magnetic fields and Ampere's law. Capacitance and inductance, DC and AC circuits. Electromagnetic waves. (Lec. 3) Pre: 203 or MCE 236, credit or concurrent enrollment in MTH 142, and concurrent enrollment in 274. Intended for science ar engineering majors. Not open to students with credit in 214. Staff

205 Elementary Physics III (I and II, 3) Introduction to topics of thermodynamics, kinetic theory, wave motion, acoustics, and optics, (Lec. 3) Pre: 203 or MCE 263, credit or concurrent enrollment in MTH 243, and concurrent enrollment in 275. Intended for science or engineering majors. Not open to students with credit in 213, 214. Staff

213, 214 Elementary Physics I, II (I and II, 3 each) 213: Mechanics and elements of thermodynamics. (Lec. 3) Pre: MTH 141 and 142. 142 may be taken concurrently. For students planning to major in one of the sciences. 214: Electricity, magnetism, and elements of wave phenomena. (Lec. 3) Pre: concurrent enrollment in 285 and 286, MTH 142, and credit or concurrent enrollment in MTH 243. Intended for science or engineering majors. Staff (N)

273, 274, 275 Elementary Physics Laboratory 1, II, III (I and II, 1 each) Laboratory exercises and recitation sessions related to topics in 203, 204, and 205, (Lab. 3) Pre: concurrent enrollment in 203, 204, and 205. Staff

285, 286 Physics Laboratory I, II (I and II, 1 each) Laboratory exercises and recitation sessions related to topics in 213 and 214. (Lab. 3) Pre: concurrent enrollment in 213 and 214. Staff

306 Elementary Modern Physics (I and II, 3) Introduction to relativistic and quantum physics. Special relativity theory, structure of atoms, molecules, and nuclei; wave and particle properties of matter, Schrodinger equation in one dimension. (Lec. 3) Pre: 204, 205, or ELE 210. Not open to students with credit in 341. Staff

322 Mechanics (1, 3) Introduction to Newtonian statics and dynamics using vector analysis; particle motion, Lagrange's equations; rigid body motion. Application to various topics in physical mechanics. (Lec. 3) Pre: 204 and MTH 244. Staff

331 Electricity and Magnetism (II, 3) Electrostatic fields and dielectric materials; magnetic fields, magnetic induction and magnetic materials; introduction to Maxwell's equations. (Lec. 3) Pre: 204 and MTH 243. Staff

- 334 (or AST 334) Optics (II, 3) Geometrical and physical optics; thick lens optics, interference, diffraction, polarization. (Lec. 3) Pre: 112, 214, or 205, Staff
- 341 Introductory Modern Physics (I and II, 3) The development and current status of major advances in twentieth-century physics, such as special relativity, kinetic theory, structure of atoms, molecules and nuclei, wave and particle properties of matter, thermionic and photoelectric effects. (Lec. 3) Pre: 213, 214, and MTH 142. 223 and ELE 210 can be substituted for 214. Not open to students with credit in 306. Staff
- 381, 382 Advanced Laboratory Physics (I and II, 3 each) Key experiments covering a wide range of disciplines including nuclear physics, properties of the electron, magnetism thermodynamics, and optics. Quantitative analysis is stressed, including statistics and curve fitting. Technical skills are developed. (Lab. 6) Pre: 204 and 205. Desjardins and Nunes
- 401, 402 Seminar in Physics (I and II, 1 each) Preparation and presentation of papers on selected topics in physics. (Seminar) Required of all undergraduate and graduate students in physics; one semester required for all senior physics majors. Staff
- 410 Computational Physics (II, 3) Development and application of computer techniques to classical and quantum physics problems. Emphasis will be on approximation techniques and numerical methods for solving matrix, integral, and differential equations arising in physics. (Lec. 2, Lab. 3) Pre: MTH 215, 244, CSC 202, and PHY 306. Staff
- 420 Introduction to Thermodynamics and Statistical Mechanics (II, 3) Emphasis on laws of thermodynamics and properties of thermodynamic systems, kinetic theory of gases, molecular velocity distributions, transport phenomena, Maxwell-Boltzmann statistics. (Lec. 3) Pre: 205 and MTH 243. Northby
- 425 Acoustics (1, 3) Mathematical theory of vibrating systems: harmonic wave motion. Topics include: transmission and absorption of sound waves, microphones, psychoacoustics, underwater acoustics, and ultrasonics. (Lec. 3) Pre: permission of chairperson. Staff
- 451 Introduction to Quantum Mechanics (1, 3) Photoelectric, Compton effects; spectra, atomic structure, matter waves, duality, uncertainty, Schrodinger equation; 1-D, hydrogen.

- Postulates: wave functions, dynamical variables, Hermiticity, eigenvalues, commutators, generalized uncertainty. Angular momentum: spherical harmonics, Pauli matrices, Spin-orbit, Zeeman effects; angular momenta addition. (Lec. 3) Pre: 306, 322, MTH 215 and 244. Staff
- 452 Quantum Mechanics: Techniques and Applications (II, 3) Perturbation theory, atomic polarizability, Stark effect, periodic potentials. Variational principles. Sudden approximation: nuclear decay. Time-dependent perturbations: radiation, selection rules. Ehrenfest theorem. Scattering: Born approximation, partial waves. Fermions, bosons, helium atom: Hartree (Fock) and Monte Carlo optimization. (Lec. 3) Pre: 451 and MTH 461. Staff
- 455 Introduction to Solid-State Physics (1, 3) Crystal structure, thermal, electrical, and magnetic properties of solids. Electron gas theory of metals, band theory of solids. Semiconductors. (Lec. 3) Pre: 451 and MTH 243. Staff
- 483, 484 (or AST 483, 484 or OCG 483, 484) **Laboratory and Research Problems in Physics** (I and II, 3 each) Research in current areas of physics. Students perform research projects with individual faculty members. Students in physics and physical oceanography may coordinate their research project with a faculty member of the Graduate School of Oceanography. (Lec. 1, Lab. 6) Pre: 381 and 382. Staff
- 491, 492 (or AST 491, 492) Special Problems (I and II, 1-6 each) Advanced work under the supervision of a staff member arranged to suit the individual requirements of the student. (Independent Study) Staff
- 510 Mathematical Methods of Physics I (1, 3) Topics designed to include applications in physics. Vector and tensor analysis; linear algebra; coordinate systems. Determinants, matrices; introductory group theory. Infinite series, complex analysis, analytic properties, conformal mapping, calculus of residues. Fourier analysis and Laplace transforms. (Lec. 3) Pre: permission of chairperson. Staff
- 520 Classical Dynamics (1, 3) Newton's laws. Conservation theorems and symmetry properties. Lagrangian mechanics. Central force motion. Dynamics of rigid bodies. Hamiltonian mechanics. Canonical transformations. Actionangle coordinates. Hamilton-Jacobi theory. Deterministic chaos. Relativistic mechanics. (Lec. 3) Pre: credit or concurrent enrollment in 510. Staff
- 525 Statistical Physics 1 (1, 3) Equilibrium thermodynamics (laws of thermodynamics, thermodynamic potentials). Phase transitions (phase

- coexistence, Clausius-Clapeyron equation, metastable states, critical point). Kinetic theory. Equilibrium statistical mechanics (microcanonical, canonical, grandcanonical ensembles, bosons, fermions). Critical phenomena. (Lec. 3) Pre: 420 or equivalent, 510. Staff
- 530 Electromagnetism I (II, 3) Electrostatics, including boundary value problem. Multipoles, electrostatics of macroscopic media, dielectrics. Magnetostatics. Time-varying fields, Maxwell equations, conservation laws. Plane electromagnetic waves, wave propagation. Wave guides, resonant cavities. Magnetic materials, (Lec. 3) Pre: credit or concurrent enrollment in 510 and 520. Staff
- 560 Experimental Methods in Condensed Matter Science (I or II, 3) Fundamental expenments on topics related to departmental research. Experimental methodology. (Lec. 2, Lab. 3) Pre: 484 or equivalent. Staff
- 570 Quantum Mechanics I (II, 3) Dirac notation. Matrix representations, observables, uncertainty relations. Time evolution; Schroedinger and Heisenberg pictures. Schroedinger equation applications. Propagators and Feynman path integrals. Aharonov-Bohm effect. Angular momentum; Wigner-Eckart theorem. (Lec. 3) Pre: credit or concurrent enrollment in 510 and 520. Staff
- 580 Condensed Matter Physics I (1, 3) Introductory theories. Crystal lattices (classification, reciprocal lattice, diffraction). Electron energy levels (periodic structures, tight-binding, APW, OPW approximations, pseudopotentials; Fermi surfaces). Phonons (harmonic and anharmonic effects). Dispersion. Electron-phonon interaction. (Lec. 3) Pre: 530 or permission of chairperson. Staff
- 590 Faculty Project (I or II, 1-6) A special project directly related to the research program of an individual faculty member. (Independent Study), Pre: permission of chairperson. Not to exceed 6 credits. Staff
- 591 Special Problems (1 or II, 1-6) Advanced study under the supervision of a faculty member arranged to suit the individual needs of the student. (Independent Study) Pre: permission of chairperson. Not to exceed 6 credits. Staff
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 610 Mathematical Methods of Physics II (II, 3) Topics designed to include applications in physics. Ordinary and partial differential equations;

Sturm-Liouville theory. Numerical methods and computational techniques. Probability and statistics. Integral transforms, Integral equations; Green's functions, Special functions of mathematical physics. (Lec. 3) Pre: 510. Staff

625 Statistical Physics II (II, 3) Equilibrium critical phenomena (critical exponents, scaling relations, multicritical phenomena). Exact solutions. Renormalization group theory and other approximate methods. Critical behavior of magnets, fluids, and surfaces. (Lec. 3) Pre: 525 and 670. Staff

626 Statistical Physics III (II, 3) Stochastic processes. Markov condition. Master equation. Fokker-Planck equation. Brownian motion. Langevin equation. Transport phenomena. Onsager theory of irreversible processes near equilibrium. Boltzmann equation. Linear response theory, fluctuation dissipation theorem. (Lec. 3) Pre: 525. Muller

630 Electromagnetism II (1, 3) Radiating systems, scattering, and diffraction. Special theory of relativity. Dynamics of relativistic particles and electromagnetic fields. Collisions between charged particles, energy loss and scattering. Radiation by moving charges. Multipole fields. (Lec. 3) Pre: 530. Staff

660 Nuclear and Particle Physics (II, 3) Weak, strong, and electromagnetic interactions. Nucleon-nucleon potential, shell model, optical model. Isospin, unitary symmetry, quark model of hadrons. Scattering and reaction theory of few-body systems. Deuteron. Relativistic nuclear and particle phenomena. (Lec. 3) Pre: 570 and 670. Staff _

670 Quantum Mechanics II (1, 3) Symmetry (parity, translation, time-reversal). Time-independent (dependent) perturbation theory, variational methods. Identical particles. Scattering theory (Lippman-Schwinger equation, Born series, partial waves, resonances, optical theorem, inelastic scattering). Applications, Relativistic quantum mechanics. (Lec. 3) Pre: 570 or permission of chairperson. Staff

672 Quantum Mechanics III (II, 3) Atomic systems (structure, semiclassical radiation theory, collisions). Quantum fields (scalar, spin-1/2, electromagnetic). Applications: quantum field theory (Feynman diagrams in QED and weak interactions, renormalization). Fock space. Many-body theory. (Lec. 3) Pre: 670. In alternate years. Next offered spring 1997. Staff

680 Condensed Matter Physics II (II, 3) Interacting systems. Green's functions. Second quantization. Landau theory of quasi-particles. Schroedinger and Heisenberg pictures. Manybody Green's functions. Perturbation series, diagrammatic analysis. Dielectric response. Thermal properties. Phonons in metals. (Lec. 3) Pre: 580. Staff

690 Topics in Physics (I or II, 3) Advanced topics in areas of research specializations: a) neutron physics; b) quantum fluids; c) magnetism; d) surface physics; e) nonlinear phenomena; f) advanced quantum physics; g) nuclear physics; h) low-temperature physics. (Lec. 3) Pre: permission of chairperson. Staff

691 Advanced Special Topics (I or II, 1-6) Special topics related to current developments by visiting or permanent faculty. (Lec. 1-6) Pre: permission of instructor. Staff

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

930 Workshop in Physics Topics for Teachers (I, II, and SS, 0-3 each) Especially designed for teachers of physical sciences. Basic topics in physics from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification. Staff

Plant Sciences (PLS)

Chairperson: Professor Hull

150 Plant Biology for Gardeners (SS, 3) Fundamentals of plant biology, emphasizing the structure, physiology, and ecology of vascular plants common to gardens and landscaped environments. (Lec. 3) Hull

200 Introduction to Plant Protection (1, 3) Basic study of weeds, insects, and disease agents, and the problems they cause. Recognition of important plant pests and application of integrated cultural, chemical, and biological pest management procedures. (Lec. 2, Rec. 2) Pre: BIO 101 or BOT 111. Englander

205 Solving Problems in Plant Biology 1 (1, 4) A hands-on approach to the solution of major problems dealing with plant productivity. (Lec. 3, Lab. 2) Krul

210 Plant Protection Practicum (I, 1) Introduction to practical aspects of plant protection. Optional recitation for 200. In-depth development of selected topics in 200, primarily through discussion session and field examination of specimens. (Practicum) Pre: concurrent enrollment in 200. Englander

233 Floral Art (I and II, 3) Theory and practice in the art of flower and plant arrangement for the home, show, and special occasions. History, elements, and principles of design and color. (Lec. 1, Lab. 4) Siligato (A)

250 Plant Breeding and Genetics (II, 4) Introduction to the general principles of plant breeding, with emphasis on the application of genetic principles in plant improvement strategies. (Lec. 3. Lab. 2) Pre: BOT 101 and 111. Chandlee and Ruemmele

255 Fundamentals of Plant Physiology (II, 2) Fundamental concepts underlying life functions in plants. Emphasis on energy relations and material transport. Special consideration of photosynthesis, water use, nitrogen utilization, dormancy, and photomorphogenesis. (Lec. 2) Pre: BOT 111, CHM 101; PLS 205 recommended. Hull

305 Solving Problems in Plant Biology II (II, 4) A hands-on approach to the solution of major problems involving plant productivity. Student teams conduct either original research or explore at a deeper level the original research initiated in 205. (Lec. 3, Lab. 2) Pre: 205 or permission of instructor, Krul

306 Landscape Management and Arboriculture (1, 3) Culture of new and established trees. shrubs, and vines in the landscape. Practical exposure to planting, pruning, fertilization, and plant protection. Prepares the student for Arborist's Certification Examination. (Lec. 2, Lab. 2) Pre: BOT 111 or permission of instructor. Maynard

311 Fruit Culture (1, 3) Principles of fruit production with emphasis on home gardens. Topics include propagation, planting, soils, fertilization, cultural practices, pruning and storage of tree and small fruits and dwarfs or semi-dwarf stocks. (Lec. 2, Lab. 2) Pre: 205. In alternate vears. Next offered fall 1995. Alm

315 Introduction to Horticulture Therapy (1, 3) Objectives and techniques of applying horticulture and horticulture-related skills to therapeutic and rehabilitative programs. (Lec. 3) Pre: 205 or permission of instructor. Shaw

316 Gardens and Therapy (1, 3) Identification, culture, and use of garden flowers and herbs. Garden planning and design with emphasis on those appropriate for special populations. (Lec. 2, Lab. 2) Pre: 205 or permission of instructor. In alternate years. Next offered fall 1996. Shaw

320 Landscape Design (1, 3) Examination of landscape design principles and practices including introduction to landscape graphics, pre-

- liminary design, and planting design. (Lec. 3) Pre: LAR 201 or permission of instructor. Not open to landscape architecture majors. Simeoni
- 322 Power Units (II, 3) Principles of operation, maintenance, and adjustment of power units including gasoline and diesel engines and electric motors. Emphasis on tractors and other power units important in farm, nursery, greenhouse, and grounds maintenance operations. (Lec. 2, Lab. 2) In alternate years. Next offered spring 1996. Wing
- 324 Vegetable Science (II, 3) The origins, culture, cultivars, soil, and fertility management of vegetables for commercial growers and home gardeners. Practical experience in growing vegetables from seed to harvest under greenhouse conditions. (Lec. 2, Lab. 2) Pre: 205. In alternate years. Next offered spring 1997. Reynolds
- 331 Floriculture and Greenhouse Management (1, 3) The greenhouse environment and its relation to the culture of specific plants. Principles governing the production and culture of plants under controlled temperature, humidity, light, and modified atmospheres. Greenhouse construction and environmental control. (Lec. 3) Pre: 205 or permission of instructor. Shaw
- 332 Plant Pathology: Introduction to Plant Diseases See Botany 332.
- 335 Commercial Floral Design and Flower Shop Practices (1, 3) Advanced floral design including wedding, funeral, church, and holiday arrangements. Flower shop practices, buying, selling, and handling cut flowers and potted plants. (Lec. 1, Lab. 4) Pre: 233 or permission of instructor. Siligato
- 341 Lawn Management (I, 3) Fundamental aspects of turfgrass science including identification, propagation, fertilization, pest control, and other soil-plant relationships. (Lec. 2, Lab. 2) Pre: 205 and NRS 212. Duff
- 350 Interior Plantscaping (II, 3) Identification, growth characteristics, culture, use, maintenance, and management of plants suitable for interior landscape situations. (Lec. 2, Lab. 2) Pre: 205 or permission of instructor. Shaw
- 352 (or ASP 352) General Genetics (1, 3) Introduction to basic genetic principles and concepts leading to an understanding of genes. Heredity and the expression of inherited variation. Applications and implications of these concepts to animals, plants, fungi, and bacteria are discussed. (Lec. 3) Pre: BOT 111, or BIO 101 or 102, or ZOO 111. Not open to students with credit in BOT 352. Chandlee

- 353 Landscape Plants I See Landscape Architecture 353.
- 354 Landscape Plants !! See Landscape Architecture 354.
- 355 (or ASP 355) Genetics Laboratory (1, 2) Basic principles and concepts of genetics demonstrated with microorganisms, plants, and animals. (Lab. 4) Pre: credit or concurrent enrollment in 352 or BOT 352. Not open to students with credit in BOT 454. Chandlee
- 390 Irrigation Technology (II, 3) A study of the science and technology of obtaining, applying, and managing water as it relates to the culture of field, forage, vegetable, turf, and ornamental crops. (Lec. 2, Lab. 2) Pre: NRS 212 and MTH 111. In alternate years. Next offered spring 1996. Sullivan
- 393, 394 Plant Protection Clinic (I and II, 3 each) Practical experience in plant pest detection and identification, pest management techniques and equipment, (Lec. 1, Lab. 4) Pre: ENT 385, PLS 332 or 440, and permission of instructor. Wallace
- 399 (or LAR 399) Plant Sciences Internship (1, II, and SS, 1-6) Directed work experience programs at nurseries, turf farms, greenhouses, plant breeding farms, arboreta, research farms, or laboratories. (Practicum) Pre: 205 and permission of instructor. May be repeated for a maximum of 6 credits. S/U credit. Staff
- 401, 402 Plant Sciences Seminar (I and II, 1 each) Presentations and discussions of current topics of concern to producers and consumers of plants and plant products, including plant protection. (Seminar) Hull
- 405 Propagation of Plant Materials (II, 3) Theoretical and practical study of propagation including grafting, budding, cuttage, and seedage. (Lec. 2, Lab. 2) Pre: 205. Maynard
- 415 Theories and Practices in Therapeutic Horticulture (II, 3) Concepts and methods of using plant and gardening activities in horticulture therapy programs for exceptional individuals in most types of therapeutic situations. (Lec. 1, Lab. 4) Pre: 315 and 316. Not for graduate credit in plant science. Shaw
- 436 Floriculture and Greenhouse Crop Production (II, 4) Status of floriculture industry and commercial production of greenhouse crops including scheduling, marketing, and postharvest handling. Student project required. (Lec. 3, Lab. 2) Pre: 331. In alternate years. Next affered spring 1996. Shaw

- 440 Diseases of Turfgrasses, Trees, Shrubs, and Ornamental Shrubs (1, 3) Disease diagnosis, epidemiology, and control measures pertinent to these categories of plants. (Lec. 3) Pre: BOT 332 or equivalent or permission of instructor. lackson
- 441 Plant Disease Laboratory (1, 1) Laboratory and field diagnosis of turf diseases and diseases of trees and ornamental shrubs. (Lab. 2) Pre: concurrent enrollment in 440. lackson
- 442 Professional Turfgrass Management (II, 3) Establishment and maintenance practices for specialty turfgrass areas such as golf courses, lawn tennis courts, bowling greens, athletic fields, public parks, industrial and institutional grounds, airports, and roadsides. Design and construction specifications, and construction and maintenance budgets. (Lec. 3) Pre: 341 or equivalent. Duff
- 461 Weed Science (I, 3) Ecological and cultural aspects of weed problems, physiology of herbicide action, selected problem areas in weed control and plant identification. (Lec. 2, Lab. 2) Pre: NRS 212; organic chemistry recommended. In alternate years. Next offered fall 1995. Sullivan and Hull
- 463 Principles of Plant Disease Control (II, 3) The extent and impact of plant disease loss. Disease-causing agents, the nature of disease epidemics, disease forecasting, and strategies for plant disease control. (Lec. 3) Pre: 332 or permission of instructor. In alternate years. Next offered spring 1997. Jackson and Wallace
- 471 Plant Improvement I (I, 3) Plant cell and tissue culture methodologies particularly as they relate to the development and selection of improved plant varieties through the modern approaches of plant biotechnology. (Lec. 3) Pre: 205 and ASP 352 or BOT 352. In alternate years. Next offered fall 1995, Krul
- 472 Plant Improvement II (II, 3) Traditional breeding and contemporary approaches to the improvement of economic crops with a focus on emerging strategies and opportunities utilizing the tools of molecular biology for gene transfer. (Lec. 3) Pre: 205 and ASP 352 or BOT 352. In alternate years. Next offered spring 1996. Chandlee
- 475 (or NRS 475) Plant Nutrition and Soil Fertility (1, 4) The plant-soil system. Availability and mobility of mineral nutrients in soil and their uptake, distribution, and function in plants. Plant energy relations and organic nutrition. Laboratory: hydroponic plant culture, ion interactions, radioisotopes, and deficiency symptoms. (Lec. 3, Lab. 2) Pre: 205, NRS 212,

- liminary design, and planting design. (Lec. 3) Pre: LAR 201 or permission of instructor. Not open to landscape architecture majors. Simeoni
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- 332 Plant Pathology: Introduction to Plant Diseases

See Botany 332.

- 335 Commercial Floral Design and Flower Shop Practices (1, 3) Advanced floral design including wedding, funeral, church, and holiday arrangements. Flower shop practices, buying, selling, and handling cut flowers and potted plants. (Lec. 1, Lab. 4) Pre: 233 or permission of instructor. Siligato
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- 353 Landscape Plants! See Landscape Architecture 353.
- 354 Landscape Plants !! See Landscape Architecture 354.
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- 401, 402 Plant Sciences Seminar (I and II, 1 each) Presentations and discussions of current topics of concern to producers and consumers of plants and plant products, including plant protection. (Seminar) Hull
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- 342 Political Theory: Modern and Contemporary (II, 3) Continuation of 341. Machiavelli to Marx and Freud. (Lec. 3) Killilea (L)
- 343 Revolutionary Thought (II, 3) Analysis of revolutionary thought from Jewish millennarianism to Latin American and Asian communism. (Lec. 3) Pre: 113. Offered every third year. Rothstein
- 344 International Financial Economics See Economics 344.
- 365 Political Parties and Practical Politics (I, 3) Analysis of the American party process with some attention to comparative party systems. History, organization, functions, methods, problems, and prospects for reform. (Lec. 3) Pre: 113. Zucker
- 368 Public Opinion (1, 3) Examination of public opinion and formative influences upon it. Role and implications of public opinion in governmental process. (Lec. 3) Pre: 113. Tyler
- 369 Legislative Process and Public Policy (II, 3) Analysis of American legislative bodies, particularly Congress, some attention to comparative legislatures. Structure, organization, functions of Congress analyzed in relation to its role in determining public policy. (Lec. 3) Pre: 113. Zucker
- 370 Politics and Media (1, 3) Analysis of the relationship between the mass media in the United States and the political process. Emphasis on the impact of the media on both domestic and foreign policy processes. Pre: 113, 116, or permission of instructor. JOR 110 is recommended. Genest
- 375, 376 Field Experience in Practical Politics (I or II, 1-3 each) Supervised experience in local, state, and national units of government, political organizations, private and public community agencies. Students must have placement description, faculty supervisor, and outline of academic component of experience prior to registration. (Practicum) Pre: 12 credits in the social sciences including 6 credits in political science and permission of instructor. S/U credit. May be repeated for a maximum of 6 credits. Staff
- 377 Politics of the People's Republic of China (1, 3) Institutions of the Chinese system including the Communist Party, the state system, the bureaucracy, and the army. Emphasis on China's economic and social progress and relations with other nations. (Lec. 3) Pre: 116 or equivalent recommended. Tyler
- 401 Comparative European Politics (1 or 11, 3) Concepts and methodologies relative to the

- study of comparative politics. Structural-functional approach to survey of the formal and informal features of the political systems of Great Britain, France, Germany, Soviet Union, and one other country. (Lec. 3) Petro (F)
- 402 Environmental Policy and Politics (1, 3) Seminar in the politics and public policy associated with environmental pollution. (Lec. 3) Pre: 113 and junior or senior standing. Hennessey
- 403 Global Ecopolitics (II, 3) Seminar focuses on the international politics of global pollution, marine pollution, atmospheric pollution, tropical deforestation, and conservation. (Lec. 3) Pre: 116 or 402. Hennessey or Stein
- 405 The Indian Political System: Tradition and Modernity (II, 3) Analysis of the Indian political system; emphasis on social and cultural influences, Gandhi and Nehru, human rights, rural and urban development, regional and international relations. (Lec. 3) Pre: 116 or permission of instructor. Stein
- 406 Russian Foreign Policy (II, 3) An upperlevel introduction to the issues of Russian foreign policy, including relations with newly formed states of the CIS. (Lec. 3) Pre: six credits in the social sciences recommended or permission of instructor. Offered in alternate years. Petro
- 407 Politics of the Russian Commonwealth (II, 3) An upper-level introduction to the politics and society of Russia and the newly created states of the CIS. (Lec. 3) Pre: six credits in the social sciences recommended or permission of instructor. Offered in alternate years. Petro (F)
- 408 African Governments and Politics (1, 3) Political developments in the new nations of sub-Saharan Africa. Main stress is functional: role of parties as integrative forces, democratic centralism, one-party states, African political thought, and common developmental problems. (Lec. 3) Pre: 113 and 116. Hamilton (F)
- 410 Issues in African Development See African and Afro-American Studies 410.
- 420 Nonviolence and Change in the Nuclear Age (1, 3) Focuses on the philosophies and political participation of individuals and movements working nonviolently for social change and conflict resolution and to end the threat of nuclear war. (Lec. 3) Pre: 113 or 116. Stein
- 422 Comparative American State Politics (II, 3) Comparative study of American state politics and government, focusing on public policy formation and execution. Emphasis on contemporary issues. (Lec. 3) Pre: 221 and STA 308 or equivalents, or permission of instructor. Leduc

- 431 International Relations (I, 3) Analysis of the various theories of international relations and study of the major forces and events shaping the politics of the Great Powers. (Lec. 3) Pre: 116. Genest
- 432 International Government (II, 3) General development of international government, with particular attention to structure, methods, and operations of the League of Nations, the United Nations, and related agencies. Problems of security, conflict resolution, and social and economic issues. (Lec. 3) Pre: 116. Staff
- 434 American Foreign Policy (II, 3) Analysis of the institutions, techniques, and instruments of policy making and the execution of foreign policy. (Lec. 3) Pre: 116. Genest
- 440 The Politics of Being Mortal (1 or 11, 3) Seminar on how attitudes toward death affect political values and priorities, especially in regard to capitalism and the threat of nuclear war. (Lec. 3) Pre: 341, 342, or permission of instructor.
- 441 Women and Politics (II, 3) Explores the role of women in the American political system, as voters, campaign activists, and office holders, and as members of organized groups in the policy-making process. (Lec. 3) Pre: 113 or permission of instructor. Not for graduate credit. Moakley
- 443 Twentieth-Century Political Theory (1, 3) Important political theorists of this century, particularly as they interpret the basis of political obligation and weigh the question of violent political change. (Lec. 3) Pre: permission of instructor. Offered every third year. Rothstein
- 455, 456 Directed Study or Research (I or II, 3 each) Special work arranged to meet the needs of individual students who desire advanced work in political science. (Independent Study) Pre: permission of chairperson. Staff
- 461 The American Presidency (1, 3) Presidential leadership and decision making, with emphasis on growth in power and prestige of the presidency, exercise of presidential influence in conduct of government, and presidential initiative in formulating and developing national policies and priorities. (Lec. 3) Pre: 113. Moakley
- 466 (or AAF 466) Urban Problems (II, 3) Contemporary and emerging problems of urban affairs. Discussion, reading, and assignments on the interaction among urban change, development of social institutions, and formation of public policy. (Lec. 3) Pre: 113. Hamilton

- 471 Constitutional Law (1, 3) The Supreme Court as a political institution in American democracy. Analysis of leading constitutional decisions exploring: adaptation of governmental powers to changed conditions of society, development and function of judicial review, and dynamics of decision making in the Supreme Court. (Lec. 3) Pre: 113. Rothstein
- 472 Civil Liberties (II, 3) The problem of human freedom examined in the context of the fundamental rights quaranteed to individuals by the American Constitution. Emphasis on religious liberty, freedom of expression, racial equality, fair criminal procedures, and the protection of personality and privacy. (Lec. 3) Pre: 113. Rothstein
- 474 (or SOC 474) Criminal Justice System (II, 3) The American system of criminal justice, general processing of cases, principal actors, study of theories of criminal law, and pretrial detention and sentencing. (Lec. 3) Pre: 113. Staff
- 475 Behavior Systems in Crime See Sociology 475.
- 481, 482 Political Science Seminar (1 or 11, 3 each) Intensive studies in various important fields in political science, Class discussion of assigned readings and student reports. Emphasis on independent research. (Seminar) Pre: 6 credits in political science beyond 113 and 116. Staff
- 483 Political Process: Policy Formulation and Execution (I or II, 3) Interrelationships of policy development and administration with particular attention devoted to participants in the process. Specific activities of the executive branch and government policies that affect the structure, composition, and function of the bureaucracy. (Lec. 3) Pre: permission of instructor. Staff
- 485 The Politics of Children's Rights (1, 3) Explores the political aspects and their relationship to socioeconomic and cultural factors of major issues that affect children's lives. Focuses on individual and societal rights and responsibilities in America and internationally. (Seminar) Pre: 12 credits of PSC courses or permission of instructor. Stein
- 486 Cooperative Communities (II, 3) Alternative ways in which people live, work, and share together in their quest for personal growth and sense of community. Emphasis on smaller units of society. (Lec. 3) Pre: 113, 116, or permission of chairperson. Stein
- 487 Civic Community: Theory and Practice (1, 3) Seminar examines theories and practices of participatory citizenship in contemporary

- America. Explores individual and communitarian rights and responsibilities within a democratic civic culture. Includes a 40-hour community service experience. (Seminar) Pre: senior and graduate level or juniors by permission. Stein
- 491 Principles of Public Administration (1, 3) Principles of public administration, structure and organization, financial management, administrative responsibility, and the relation between the administration and other branches of government, (Lec. 3) Pre: 113. Staff
- 498 Public Administration and Policy Formulation (II, 3) Identification and analysis of factors which affect formulation of public policy, including roles of the executive, the bureaucracy, the legislature, and special interest groups. Evolution of the policy process, particularly at the state and local levels of government. (Lec. 3) Pre: 491 or permission of chairperson. Hennessey
- 501 Administrative Theory (1 or II, 3) Theoretical constructs and models in fields of public administration; theories of Weber, Riggs, Dorsey, Simon, Presthus. Lower-level models in subfields of organization, communications, and decision making. Task-oriented subject matter such as personnel, budget, and program administration related to theoretical formulations which seek to explain them. (Lec. 3) Pre: 491 or permission of instructor, Staff
- 502 Techniques of Public Management (I or II, 3) Principles and techniques employed in the administration of staff activities of the public service, such as administrative planning, project scheduling, and budgeting. (Lec. 3) Pre: 491 or permission of instructor. Staff
- 5.03 Problems in Public Personnel Administration (I or II, 3) Development of personnel administration, including problems of recruitment, examination, promotion, and staffing within public service. Emphasis on evaluation of employee performance and collective bargaining in public service. (Lec. 3) Pre: graduate standing or permission of instructor, Staff
- 504 Ethics in Public Administration (1, 3) This course explores through case studies, class discussion, films, and readings how ethical deliberation in the public sector is an essential commitment and skill for public administrators. (Seminar) Pre: graduate standing or permission of instructor, Killilea or Vocino
- 505 (or SOC 505) Public Program Evaluation (I or II, 3) Research design and methodologies associated with the evaluation of governmental programs and activities. (Lec. 3) Pre: STA 308 or equivalent or permission of instructor. Staff

- 506 Seminar in Budgetary Politics (1, 3) Examination of federal, state, and local fiscal and budgetary processes, focusing on the politics of the budgetary process and models of budgeting, with emphasis on contemporary issues. (Seminar) Staff
- 512 Marine Science and Policy Analysis See Marine Affairs 512.
- 521 International and Comparative Trade Unions and Labor Relations See Labor and Industrial Relations 521.
- 522 Issues in Corrections See Sociology 522.
- 523 Seminar in Comparative Public Administration (I or II, 3) Theory, practice, and organization of selected European and developing nations' administrative systems. Analysis of selected policies. Influence of English and French systems on developing systems. Structurefunction and ecological analysis. (Seminar) Pre: 491, 501, or permission of instructor. Staff
- 524 Seminar in Public Policy Problems (1 or 11, In-depth exploration of selected problems of policy formulation: intergovernmental relations, regionalization, citizen participation and control, priority setting for public sector programs. (Seminar) Pre: 491, 501, or permission of instructor. Staff
- 544 Democracy and Its Critics (I or II, 3) Seminar examining the roots of modern democracy in the social contract theories and analyzing the quality and limits of self-determination in these theories in the light of contemporary politics. (Lec. 3) Pre: 341, 342, or permission of instructor. Killilea
- 546 Peace and World Order Studies (II. 3) This seminar explores various approaches globally to peacebuilding, world order, and community. Emphasizes conflict resolution, from local to transnational levels, and the search for social justice and human unity. (Seminar) Pre: 420 or permission of instructor. Stein
- 553 Scope and Methods of Political Science (1, 3) Study of political science as a discipline, its development in relation to other social sciences, and survey of political theories, concepts, and analytic models. (Seminar) Pre: graduate standing. Leduc
- 555, 556 Directed Study or Research (I or II, 3 each) Special work arranged to meet the individual needs of graduate students in political science. (Independent Study) Pre: permission of chairperson. Staff

568 Jurisprudence (*II*, 3) Introduction to the philosophy of law, treating the sources, the nature, and the consequences of major systems of legal thought. Emphasis on the relationship between legal reasoning and judicial decision making in the United States. (Lec. 3) Pre: 471, 472, or permission of instructor. Staff

573 Administrative Law (I or II, 3) Legal aspects of interaction between government agencies, individuals, and public interest groups. Systematic analysis of leading cases, evaluating the courts as an instrument for protecting the individual's rights in administrative action. (Lec. 3) Pre: 113. Rothstein

577 International Ocean Law See Marine Affairs 577.

580 Seminar in International Relations Theory (I or II, 3) A critical treatment of major international relations theories beginning with an analysis of core theoretical concepts. (Seminar) Pre: honors seniors with permission of instructor or graduate standing. Genest or Petro

581, 582 Special Topics Seminar (I, II, or SS, 3 each) Master's-level seminar on special topics in political science not regularly covered in other courses. (Seminar) Pre: graduate or senior standing in political science or permission of instructor. May be repeated up to five times for a total of 15 credits with different topic. Staff

583 Seminar in American Politics (1 or 11, 3) Critical consideration of central issues in American political institutions, behavior, and policy making. (Seminar) Pre: honors seniors with permission of instructor or graduate standing. Zucker or Moakley

584 Seminar in Advanced Comparative Theory (I or II, 3) A critical treatment of the major methodological approaches used in comparative politics beginning with an analysis of core theoretical concepts. (Seminar) Pre: graduate standing; undergraduates only with permission of instructor. Petro

590 Internship in Public Administration (I or 11, 3-6) Participation at an administrative agency under supervision of agency head and a faculty member. Planning, personnel management, research organization, budgeting, interdepartmental relations, informal liaisons that are the hallmark of effective administration. (Practicum) Pre: permission of M.P.A. director. May be taken. as one 6-credit unit or two 3-credit units. Staff

595 Problems of Modernization in Developing Nations

See Resource Economics 595.

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Portuguese (POR)

Section Head: Professor McNab

101 Beginning Portuguese I (I and II, 3) Fundamentals of modern European Portuguese. Emphasis on standard pronunciation, development of familiarity with most common grammar structures, and acquisition of working vocabulary. (Lec. 3) Pre: no prior Portuguese is required. Staff (F)

102 Beginning Portuguese II (I and II, 3) Continuation of 101. (Lec. 3) Pre: 101 or equivalent or permission of instructor. Staff (F)

103 Intermediate Portuguese I (I and II, 3) Intensive and extensive reading of moderately difficult Portuguese prose, review of grammar structures, idiomatic expressions, conversation practice based on readings. (Lec. 3) Pre: 102 or equivalent or permission of instructor. Staff (F)

104 Intermediate Portuguese II (I and II, 3) Continuation of 103. Readings of more difficult texts. Class discussion and reports on supplementary readings. (Lec. 3) Pre: 103 or equivalent or permission of instructor. Staff (F)

205, 206 Advanced Portuguese (I and II, 3 each) Practice in speaking and writing standard Portuguese. Understanding varieties of Portuguese. Materials of cultural, intellectual, and professional interest. (Lec. 3) Pre: 104 or equivalent or permission of instructor. Staff

335, 336 Topics in the Literature of the Portuguese-Speaking World (I and II, 3 each) Selected topics in the literatures of continental Portugal and the adjacent islands, Brazil, Cape Verde, Angola, Mozambique. (Lec. 3) Pre: 206 or equivalent or permission of instructor. 205 or 206 may be taken concurrently with permission of instructor. May be repeated for credit as often as topic changes. Staff

497, 498 Directed Study (I and II, 3 each) For the advanced student. Individual study and reports on problems of special interest. (Independent Study) Pre: one 300-level course in Portuquese, acceptance of project by staff member, and approval of chairperson. Not for graduate credit. Staff

Prior Learning Assessment (PLA)

100 Prior Learning Assessment Portfolio Development (I, II, or SS, 1) Identification through self-assessment of student prior learning and appropriate methods for seeking credit. Analysis and application of the process for developing a prior learning portfolio. (Seminar) Pre: matriculated status and permission of the student's academic dean. Offered through the College of Continuing Education. S/U only. Staff

Psychology (PSY)

Chairperson: Professor Kulberg

103 Towards Self-Understanding (I and II, 3) Individual and social problems of normal persons. Personality development, social behavior, and adjustive reactions with emphasis on increasing awareness of personal and interpersonal functioning. (Lec. 3) Grebstein, Prochaska, and Staff (S)

113 General Psychology (I and II, 3) Introductory survey course of the major facts and principles of human behavior. Prerequisite for students interested in professional work in psychology or academic fields in which an extended knowledge of psychology is basic. (Lec. 2, Rec. 1) Staff (S)

232 Developmental Psychology (I and II, 3) Comprehensive understanding of human development and growth from birth to senescence. (Lec. 3) Pre: 113. Brady, Gross, Kulberg, and Staff (S)

235 Theories of Personality (I and II, 3) Critical survey of the major theories of personality. Emphasis will be placed on the "normal" personality. (Lec. 3) Pre: 113. Stevenson and Staff (S)

254 Behavior Problems and Personality Disorders (I and II, 3) Evaluation of the more serious behavioral disorders as found in the major forms of character disorders, psychoneuroses, and psychoses. Theories of causation, development and effects of anxiety and defense mechanisms, and interpretation of symptoms and methods of treatment. (Lec. 3) Pre: 113. Florin, Vosburgh, and Staff (S)

261 The Alcohol-Troubled Person: Introductory Concepts (I and II, 3) Introductory and basic concepts in alcohol trouble: prevention, identification, early intervention, treatment, education. (Lec. 3) Staff

- 300 Quantitative Methods in Psychology (I and II, 3) Basic concepts and techniques of quantification in psychology. Emphasis on application of certain statistical tools in the analysis of psychological measurements of behavior. (Lec. 3) Pre: 113, at least one college-level mathematics course, and sophomore standing. Harlow and Cohen
- 301 Introduction to Experimental Psychology (I and II, 3) Lectures, demonstrations, and laboratory experiments introduce the student to fundamental principles of experimental techniques applied in psychological research. (Lec. 2, Lab. 2) Pre: 300. Collyer, Silverstein, Smith, and Staff
- 305 Field Experience in Psychology (I and II, 3) Direct contact with settings and populations served by psychologists. Emphasis on understanding models and theories in relation to practical problems. Topical sections may include: a) preclinical, b) community, c) laboratory, and d) organizational applications. (Practicum) Pre: 113 and permission of instructor. May be repeated for a maximum of 6 credits. Stevenson, Biller, and Staff
- 310 History and Systems of Psychology (I or II, 3) Origins of psychological inquiry and theories of psychology. Transformations of theories and methods of inquiry through the history of our culture including contemporary systems and models of psychological functioning. (Lec. 3) Pre: 113. Silverstein (L)
- 334 Introduction to Clinical Psychology (1, 3) Emphasis on scope of the field, functions of the clinical psychologist, methods used, and problems encountered, both scientific and professional. (Lec. 3) Pre: 254, junior standing, and permission of chairperson. Staff
- 335 The Psychology of Social Behavior (I and II, 3) Conceptual and empirical analyses of individual behavior in social contexts; attention to social motivation, attitude development and change, liking, conformity, aggression, altruism. (Lec. 3) Pre: 113 and junior standing or permission of instructor. Cohen
- 361 Learning (II, 3) Learning process in humans and subhumans, including principles and methods. Course features operant learning and behavior modification principles. (Lec. 3) Pre: 301 or permission of instructor. Smith
- 371 Laboratory in Learning (II, 1) Laboratory experiments in learning (primarily animal) designed to parallel course materials in 361. (Lab. 2) Pre: 301, credit or concurrent enrollment in 361, or permission of instructor. Smith and Staff

- 381 Physiological Psychology (1, 3) Physiological mechanisms operative in human behavior. Sensory, neural, endocrine, and response systems as related to sensation, perception, attention, emotions, motivations, and learning. (Lec. 3) Pre: junior standing. Valentino
- 382 Research Methods in Physiological Psychology (II, 3) A thorough introduction to the principles and techniques of experimentation in physiological psychology, including brain stimulation and lesions, electrophysiology, and pharmacology. (Lab. 6) Pre: credit or concurrent enrollment in 381 and permission of instructor. Valentino
- 384 Cognitive Psychology (1, 3) An examination of contemporary research and theories on mental activities. Topics will include: perception, pattern recognition, attention, memory, problem solving, language, consciousness, and artificial intelligence. (Lec. 3) Pre: 113 and 301 or equivalent. In alternate years. Brady
- 385 Perception (I or II, 3) Sensory function, development of perception, perception of space. color, sound, and complex events. (Lec. 3) Pre: 113 and 300, or equivalent. In alternate years. Collyer
- 388 The Psychology of Language (I or II, 3) Study of language processes in light of contemporary theories and research. Topics include speech production, perception, memory, comprehension, language and the brain, language acquisition, reading, language, and thought. (Lec. 3) Pre: junior standing. In alternate years. Brady
- 391 Theories of Learning (I or II, 3) Psychological theories developed for explanation of experimental data in the area of learning, including evaluation of learning theories, their basic concepts, and analysis of various behaviors in terms of the theoretical frameworks. (Lec. 3) Pre: 301 and junior standing. In alternate years. Silverstein
- 405 Psychological Anthropology See Anthropology 405.
- 430 Intimate Relationships See Sociology 430.
- 432 Advanced Developmental Psychology (II, 3) Major issues in developmental psychology. Emphasis on research in Piaget, Erikson, Bruner, Kagan, and Moss. Includes effects of infant care, sex typing, parental discipline, and developmental aspects of intellective and perceptual growth. (Lec. 3) Pre: 232. Biller

- 434 Psychological Testing (I and II, 3) Measurement procedures employed in the measurement of intelligence, aptitudes, abilities, attitudes, interests, and personality. Principles of validity and reliability developed and applied to the various tests. (Lec. 3) Pre: 300 or equivalent. Harlow, Velicer, and Staff
- 436 Psychotropic Drugs and Therapy See Pharmacology and Toxicology 436.
- 442 The Exceptional Individual (I and II, 3) Issues underlying the classification, institutionalization, and treatment of the physically, psychologically, and mentally disabled. Social psychology of attitudes toward the disabled, current legislation, and needs of the exceptional for integration into community life. (Lec. 3) Pre: junior or senior standing. Gross
- 456 Research Methods in Social Psychology (II, 4) Lecture and laboratory experience will introduce students to current research methods used in social psychology. (Lec. 2, Lab. 4) Pre: 300, 301, and 335 or permission of instructor. Cohen
- 460 The Substance-Troubled Person (I, II, and SS, 3) Presents theoretical and applied material on alcohol and other mood-altering substances of abuse. Relevant for alcohol and substance abuse counselors, personnel administrators, and other social service workers. (Lec. 3) Offered through the College of Continuing Education. Willoughby and Staff
- 464 Humanistic Psychology (II, 3) Discussion of humanistic approaches to the understanding and direction of behavior. Emphasis on contemporary writers such as Rogers, Maslow, May, Moustakas. Discussions of phenomenology and existentialism. (Lec. 3) Pre: 235 and junior standing. In alternate years. Next offered 1995-96. Berman
- 465 Introduction to Crisis Intervention (I or II, 3) Interventions for various types of emergencies including substance abuse and functional or organic disorders. (Lec. 3) Pre: 254 and permission of instructor. Quina, Willoughby, and Staff
- 466 Child Sexual Abuse (1, 3) Current theorizing regarding the causes of sexual abuse of children will be presented, as well as the short- and long-term effects of such abuse. Management of problems will be followed, from disclosure through current state-of-the-art practices in treatment. Issues in prevention, court cases, and investigation will be reviewed. (Lec. 3) Pre: senior status, 254, and permission of instructor. Not for graduate credit. Gross

- 470 Topics in Social Psychology (1, 3) Empirical and conceptual approaches to a major topic in contemporary social psychology. Topics will vary from semester to semester. (Seminar) Pre: 113 and 335. Cohen, A. Lott, B. Lott, and Stevenson
- 471 Applied Behavioral Analysis and Remediation (II, 3) Study and application of behavioral approaches used to analyze and remediate behavioral problems of children and adults in educational and human service settings and everyday life. (Lec. 3) Pre: 361 or permission of instructor. Offered through the College of Continuing Education only. Smith or Groden
- 473 Practicum in Behavioral Psychology (I or II, 3) Supervised, on-site field experience in applications of behavioral approaches in an educational or human service setting. (Practicum) Pre: 471 or permission of instructor. Smith, Quina, or Groden
- 479 Contemporary Problems for Modern Psychology (I and II, 3-12) Central issues and recent developments in the field. Topics limited each semester to one of the following: a) personality, b) learning, c) methods and design, d) developmental, e) motivation, f) perception, g) clinical, h) general, and i) humanistic psychology. (Seminar) Pre: 301 and permission of chairperson. May be repeated for a maximum of 12 credits. Staff
- 480 The Female Experience (II, 3) Topics ranging from the biological distinctiveness of women to social supports for sexism as they relate to attitudes, motives, and behavior of women. (Lec. 3) Pre: 113 and at least one 200level psychology course. B. Lott and Staff
- 489 Problems in Psychology (I and II, 3) Advanced work in psychology. Course will be conducted as seminar or as supervised individual project. Students must obtain written approval from proposed faculty supervisor prior to registration. (Independent Study) Pre: senior or graduate standing or permission of instructor. May be repeated once. Staff
- 499 Psychology Practicum (I and II, 1-6) Individual and group projects applying psychology in clinical or laboratory settings. (Practicum) Pre: senior standing or permission of instructor. May be repeated for a maximum of 6 credits. Not for major credit in psychology. S/U only. Staff
- 505 Community Psychology (I, 3) Introduction to community psychology; study and change of individual's interaction with community systems; theoretical and empirical models, intervention strategies, and research methods rel-

- evant to community psychology. (Lec. 3) Pre: permission of chairperson. Florin
- 517 (or STA 517) Small N Designs (II, 3) A survey of Small N experimental methodology, including hypothesis of quasi-experimental designs and the application of interrupted time series. Applications in applied research, particularly behavioral intervention. (Seminar) Pre: 532 and 533. In alternate years. Velicer
- 532 Experimental Design See Statistics 532.
- 533 Advanced Quantitative Methods in Psychology (II, 3) Advanced quantitative methods applied to psychology. Survey of methods such as multiple regression, multivariate analysis of variance, discriminate analysis, canonical correlation, principal component analysis, and factor analysis. Applications involve BMDP, SAS, or SSPS computer programs. (Lec. 2, Lab. 2) Pre: 532. Velicer or Harlow
- 540 (or EDC 540) Learning Disabilities: Assessment and Intervention (SS, 3) Applications of early screening batteries; remedial programs for various disabilities, developing treatment exercises, behavioral programs, and programs for older children and adolescents. Emphasis on pragmatic application of skills for detection and treatment. (Lec. 3) Pre: permission of instructor. May be repeated as A and B for a maximum of 6 credits. Berman
- 544 The Psychological Bases for Reading Disorders (I or II, 3) An in-depth review of research on factors related to reading ability. Topics include linguistic requirements, perceptual and neurological factors, implications for screening and instruction. (Lec. 3) Pre: graduate standing or permission of instructor. Brady
- 550 Operant Analysis of Behavior (1 or 11, 3) Introduction to the principles of operant conditioning with emphasis on the use of these principles in the analysis of behavior. (Lec. 3) Smith
- 554 Alternate Therapies (I or II, 3) Theory and practice of those individual and group techniques which can be integrated into one's present style of helping: a) existential, b) body therapies, c) cognitive therapies, and d) other contemporary approaches. Students may participate in a maximum of five distinct workshops. (Lec. 2, Lab. 2) Pre: professional and/or graduate standing and permission of the coordina-
- 581 Psychological Aspects of a Healthy Lifestyle
- See Physical Education 581.

- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 601 Physiological Psychology (II, 3) An advanced consideration of physiological research on neural, endocrine, and response systems as they relate to attention, motivation, emotion, memory, and psychological disorders. (Lec. 2, Lab. 2) Valentino
- 602 Learning and Motivation (II, 3) Empirical and theoretical analysis of the basic principles of acquisition and loss of habits. Topically organized to deal with respondent and operant conditioning, and their relationship to reinforcement and motivation. (Lec. 3) Pre: undergraduate learning course. Silverstein and Staff
- 603 Development (II, 3) Theoretical, methodological, and applied issues in life span development, including cognitive, perceptual, psychomotor, affective, and social development. Topically organized. (Lec. 3) Kulberg, Biller, and
- 604 Cognitive Psychology (1, 3) A survey of the theoretical and methodological issues in human cognition. Topics include pattern recognition, attention, memory, language, problem solving. (Lec. 3) Brady and Staff
- 605 Personality (I or II, 3) Reading of primary source materials from major personality theorists relevant to a particular topical emphasis. Application and comparative evaluation of the theories studied. (Lec. 3) Stevenson and Staff
- 606 Social Psychology (1, 3) Intensive exploration of the methods, theory, and database of contemporary social psychology focusing on salient issues that clarify significant topics in this area. (Lec. 3) A. Lott and Staff
- 607 Advanced Psychopathology (I or II, 3) Empirical literature with regard to etiological factors involved in the formation of pathological character trends and deviations. Evaluation of clinical theory and classification systems as related to the psychotherapeutic process. (Lec. 3) Grebstein and Staff
- 608 Theories and Systems (1, -3) An in-depth analysis of the origin and logical structure of major systematic approaches to psychology. Emphasis on significant recurrent controversies. (Lec. 3) Pre: graduate standing. Collyer or Silverstein
- 609 Perception (I or II, 3) A survey of topics in the psychology of perception, including sensory function; psychophysical models, measurement,

and scaling; visual perception; and methods for analyzing perceptually guided behavior. (Lec. 3) Collver

- 610 (or STA 610) Parsimony Methods (1, 3) Multivariate procedures designed to reduce the dimensionality and help in the interpretation of complex data sets. Methods include principal components analysis, common factor analysis, and image analysis. Related methods: cluster analysis and multidimensional scaling. Applications involve the use of existing computer programs. (Lec. 3) Pre: 533 or STA 541 or equivalent. In alternate years. Next offered 1996-97. Velicer
- 611 Methods of Psychological Research and Experimental Design (1, 3) Provides the student of psychology with a knowledge of research methodology and the techniques of experimental designs. It prepares for the development of thesis problems of graduate students in psychology and related disciplines. (Lec. 3) Pre: 532 and 533. Staff
- 612 (or STA 612) Structural Modeling (II, 3) Theory and methodology of path analysis with latent variables. Discussion of "causation" and correlation, Confirmatory Factor Analysis, Measurement and Structural Equation models. Practical applications utilizing LISREL, EQS, and PLS computer programs. (Lec. 3) Pre: 533 or 610. Harlow and Velicer
- 615 Collaborative Research in Psychology (I or II, 0-3) Collaborative approaches to psychological research. Special emphasis on topics that can involve students at varying levels of research skill. Format includes weekly topical seminar and biweekly colloquium combining all topical interest groups. (Seminar) Pre: 300, 301, 532, ar equivalent and permission. May be repeated for a maximum of 6 credits. S/U credit. Kulberg and Staff
- 625 Seminar: Social Psychology (II, 3) Emphasis on a major area in contemporary social psychology. Empirical studies analyzed for their relevance to theoretical and applied issues; students will design an original investigation. (Seminar) Pre: graduate standing or permission of instructor. May be repeated for a maximum of 6 credits with different topic. A. Lott, B. Lott, Cohen, and Stevenson
- 641 Introduction to Psychotherapy (1, 3) A transtheoretical analysis of the major systems of psychotherapy. Developing an integrative, eclectic model through identifying the processes of change that are the core of effective therapy. (Lec. 3) Prochaska

- 642 Introduction to Psychotherapy Practice (II, 3) Instruction and practice in the basic interviewing skills and clinical techniques necessary for practicum courses in psychotherapy. Seminar format with some lecture material, role playing, structured experiential exercises, case presentation, and discussion and videotape illustration. (Seminar) Pre: 641 and permission of instructor. S/U credit. Grebstein or Morokoff
- 644 Family Therapy (1, 3) Introduction to theories and techniques of family assessment and family therapy. Seminar format with videotape illustrations, case presentation and discussion. role playing, lecture, and selected experiential exercises. (Lec. 3) Pre: permission of instructor. Grebstein
- 645 Marital and Sexual Therapy (1, 3) Behavioral, psychodynamic, and systems perspective on marital and sexual problems and treatments. Theory and research applied in supervised practice with troubled couples. (Lec. 3) Staff
- 646 Group Therapy (1, 3) Theory, research, and change strategies developed in working with small groups. Current research, models, and techniques will be discussed in the context of actual clinical work with groups. (Lec. 3) Pre: permission of instructor. In alternate years. Grebstein
- 647 Child Therapy (1, 3) Seminar discusses issues, techniques, and research related to behavior changes in children and their families. Aspects of therapy, the role of behavioral approaches, and the participation of parents will be explored. Direct, supervised experience is included in this course. (Lec. 3) Pre: participation in the Psychological Consultation Center, Staff
- 661 Psychological Services I: Administration and Interpretation of Cognitive Tests (1, 3) Instruction and practice in administration and interpretation of cognitive tests; individual intelligence tests of both general and specific abilities. Rationale, research evidence, clinical application of Stanford-Binet, Wechsler, McCarty scales. (Lec. 2, Lab. 2) Berman and Willis
- 662 Psychological Services II: Administration and Interpretation of Personality Tests (II, 3) Instruction and practice in the administration and interpretation of instruments used in the assessment of personality. Emphasis on projective tests such as Rorschach, TAT. Rationale, research evidence, and clinical application. (Lec. 2, Lab. 2) Berman and Staff
- 664 Advanced Diagnostic Problems (II, 3) Use and interpretation of cognitive, projective, and neural psychological tests. Focus on integrating

- data into meaningful description of total personality functioning. Use of the diagnostic interview. (Lec. 3) Pre: 661, 662, and permission of instructor. In alternate years. Berman
- 665 Child Psychopathology (II, 3) Issues in the classification of disordered behavior will be related to diagnostic and treatment considerations from early childhood through adolescence. Emphasis will be placed upon synthesizing knowledge about the psychological, developmental, and educational factors that affect disordered child behavior. (Lec. 3) Pre: 660. In alternate years. Next offered 1995-96. Berman
- 666 Seminar: Ethical and Legal Issues in Psychology (I or II, 3) Ethical, legal, and professional issues as they relate to the provision of psychological services and psychological research. Emphasis is on the study of ethical issues and the examination of the development of professional standards as they relate to the areas of clinical psychology practice, school psychology practice, and applied research practice. (Seminor) Staff
- 668 School Psychological Consultation (II, 3) Historical and contemporary perspectives on consultation are discussed in terms of mental health and psychoeducational services. The focus is on the content and process of consultation in various clinical and educational settings. (Lec. 3) Pre: 666 or equivalent. Staff
- 670 Field Experience in Psychological Services (I and II, 1-12) Training placements and internships are available in a variety of institutional agencies and school settings under supervision which must be acceptable to the department: (a) school, (b) experimental areas, (c) clinical. (Practicum) Pre: permission of chairperson. S/U credit. Staff
- 672 Individual Clinical Practicum (1 or 11, 3-9) Introductory experience in dealing with clinical problems in a variety of clinical settings. Individual supervision to be arranged. (Practicum) Pre: 661, 662. May be repeated for a maximum of 9 credits. S/U credit. Staff
- 674 Clinical Practices: Therapy (I or II, 1-12) Specialized techniques of clinical interviewing, counseling, and psychotherapy. Critical discussions of student's own supervised therapy sessions: a) individual, b) behavior, c) sensitivity, d) specialized techniques. (Practicum) Pre: 640, 660, 673. May be repeated for a maximum of 12 credits. Staff

676 Neurological Correlates of Psychopathology (II, 3) Functioning and physiology of the central nervous system with particular attention to determining how neurological disruption and injury are manifested in behavioral disorder. Techniques used to evaluate and interpret neuropsychological functioning. (Lec. 2, Lab. 2) Pre: permission of instructor. In alternate years. Next offered 1995-96. Berman

680 School Practices I: Diagnostic (I and II, 3-9) Testing procedures and devices in the diagnosis of organicity, personality problems, special learning problems, visual, auditory, and memory problems; includes administration, interpretation, and special adaptation of tests in the school situation, (Practicum) Pre: 434, 661. May be repeated for a maximum of 9 credits. Staff

681 Special Problems in School Psychology (1 or II, 3-9) Role of the psychologist in the school setting. Several theoretical and practical issues concerned with the value of psychological theory, administrative philosophy, and school organization are explored. (Seminar) Pre: 680 and permission of chairperson. May be repeated for a maximum of 9 credits. Vosburgh and Staff

683 Psychology of the Exceptional Child (1, 3) Social, psychological, and educational factors that constitute the matrix of concerns with the exceptional individual in the school and community. Recent innovations in public and private education and habilitation. Research issues and legislation discussed evolve into studentstudies. (Lec. 3) Gross

687 Seminar: Topics in the Psychology of the Exceptional Individual (I or II, 3) Survey of topics and current issues in the treatment, needs, and understanding of the psychology of specific exceptionalities. (Seminar) Pre: 683. May be repeated for a maximum of 9 credits with different topics. Staff

690 Seminar: Contemporary Issues in Psychology (I and II, 3-12) Recent developments and current issues. Rigorous exploration of experimental and theoretical literature. Study limited each semester to one of the following areas: developmental, clinical, motivation, perception, psychophysics, and scaling problem solving and thinking. (Seminar) May be repeated for a maximum of 12 credits. Staff

692, 693 Directed Readings and Research Problems (1 or 11, 3-6 each) Directed readings and advanced research work under the supervision of a staff member arranged to suit the individual requirements of the students. (Independent Study) Staff

695 Seminar: Teaching Psychology (II, 3) Primarily a seminar in the teaching of psychology at the undergraduate level. Includes a consideration of general issues in college teaching, preparation of a course proposal, and sample presentation. (Seminar) Quina, Stevenson, and

696 Practicum: Teaching Psychology (1 or 11, 3) Practicum for students teaching a college-level psychology course. Supervision of course preparation, presentation, and evaluation. Individual supervision to be arranged. (Practicum) S/U credit. Staff

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Religious Studies (RLS)

Chairperson: Professor G. Johnson (Philosophy)

111 Comparative Religion (I and II, 3) Teachings of major world religions. Emphasis on Judaism, Christianity, and Islam. Some comparison with Eastern religions, specifically Hinduism and Buddhism. (Lec. 3) Wenisch (L)

125 Biblical Thought (1, 3) Selected portions of the Old and New Testaments with emphasis on their positive contribution to the philosophy of the Jewish and Christian religions. (Lec. 3) Kim (L)

126 The Development of Christian Thought (II, 3) History of religious and philosophical ideas, development of the teachings of Christianity. Emphasis to meet needs and interests of students. Historical nature of material suitable for liberal education without regard to student's' religious affiliation. (Lec. 3) Wenisch (L)

131 Introduction to Oriental Philosophies and Religions (I and II, 3) Introductory study of the main philosophical and religious ideas in the Orient, with emphasis on Hinduism, Buddhism, Confucianism, and Taoism. (Lec. 3) Kim (F) (L)

Resource Development (RDV)

Coordinator: D. Abedon

300 Introduction to Global Issues in Resource Development (I and II, 3) Role of the United States in development assistance to foreign nations. Topics include: foreign aid, resource development, transfer of technology, international career opportunities and requirements. (Lec. 3) McCreight or Abedon

487 International Development Internship (I and II, 1-6) Supervised participation in programs related to international development. Minimum of 35 hours of internship per credit. (Practicum) Pre: 300 and permission of instructor. Not for graduate credit. S/U only. McCreight or Abedon

495 International Development Seminar (II, 3) Seminar in international development for advanced-level students in the international development minor. (Seminar) Pre: 300 and permission of instructor. Not far graduate credit. McCreight or Abedon

Resource Development Education (RDE)

Coordinator: Associate Professor Mallilo

244 Introduction to Agricultural and Extension Education (II, 3) Overview of the field covering various types of educational programs and activities for prospective teachers and Cooperative Extension personnel, including FFA, 4-H, and occupational experience. (Lec. 3) Offered in spring of even-numbered years. Mallilo

444 Teaching of Agribusiness and Natural Resources

See Education 444.

486 Internship in Agricultural and Extension Education (I, II, or SS, 1-6) Provides experiential learning opportunities related to agricultural education and/or Cooperative Extension education. (Practicum) May be repeated for a maximum of 6 credits. Not for graduate credit. Mallilo

Resource Economics (REN)

Chairperson: Professor Weaver (Natural Resource and Environmental Economics)

105 Introduction to Resource Economics (I and II, 3) Application of microeconomic principles to selected resource problem areas. The market mechanism and its alternatives are examined as methods of resolving contemporary resource use problems. (Lec. 3) Weaver (S)

310 Economics for Environmental Resource Management and Policy (1, 3) Economic approaches to natural resource use and environmental policies. Exploring measures of the "economic value of environment." How scientists, managers, and markets can affect the environmental quality of life. (Lec. 3) Pre: 105 or ECN 201. Swallow

- 325 Planning and Managing a Small Natural Resources Firm (II, 3) Directed toward students with an interest in managing a small marine, agricultural, or other natural resources firm. (Lec. 3) Pre: 105 or ECN 100 or 201 or permission of instructor. Staff
- 336 Fisheries Economics (1, 3) Supply and demand of fisheries products. Cost and returns in harvesting and processing. Market power and price determination, finance, insurance, fisheries policy and management, (Lec. 3) Pre: 105 or permission of instructor. Staff
- 341 Economics of Food and Natural Resource Markets (1, 3) The function, structure, and operation of food, fisheries, and natural resource markets; price analysis; costs and margins; international trade; channels of distribution; futures markets; marketing information; regulations and controls; cooperative marketing. (Lec. 3) Pre: 105 or ECN 201 or permission of instructor. Anderson
- 345 International Trade in Natural Resource Products (II, 3) Economics of national and international policies regarding international trade in exhaustible and renewable natural resource products. Impacts of these policies on resource management and producer and consumer welfare. (Lec. 3) Pre: 105 or ECN 201 or permission of instructor. Wessells
- 410 Fisheries Economics (1, 3) Institutional, biological, and economic factors affecting the use of marine fishery resources. Bioeconomic analysis is applied to problems of marine fisheries management and development in both high- and low-income countries. Evaluation of public policy alternatives. (Lec. 3) Pre: 310 or ECN 328 or 323 or permission of instructor. Sutinen
- 432 Environmental Economics and Policy (II, 3) Economic analysis of policies that address environmental and natural resource problems. Topics include pollution-control policies, economic incentives, and the optimal use of renewable and nonrenewable natural resources. (Lec. 3) Pre: 105 or ECN 201. Wichelns
- 435 Aquacultural Economics (1, 3) Economics of international and domestic development of aquaculture, environmental and resource requlations on aquaculture, and management of and decision making in aquacultural enterprises. Analysis of public and privateaquaculture production and marketing. (Lec. 3) Pre: 105 or ECN 201 or permission of instructor. Anderson

- 440 Benefit-Cost Analysis (II, 3) Basic concepts in benefit-cost analysis. Measurement, comparison of benefits and costs over time, and criteria for evaluation of projects and public policies. Problems and case studies in evaluation of current natural resources issues. (Lec. 3) Pre: 105 or permission of instructor. Grigalunas
- 456 Tourism Economics (II, 3) Application of economic principles and research methods to tourist and tourism industry behavior. A framework for assessing economic, social, and environmental benefits and costs of tourism development is compared to practical research methods. (Lec. 3) Pre: 105 or ECN 201. Tyrrell
- 460 Economics of Ocean Management (1, 3) The role of marine resources use in the economy. Oceans policy arising from multiple-use conflicts. Current marine resource issues examined such as fisheries, offshore oil, marine mining, and shipping. (Lec. 3) Pre: 410 or permission of instructor, Staff
- 470 Natural Resource Allocation and the Leadership Process (1, 3) Application of leadership skills to natural resource policy, especially coastal issues. Group dynamics, conflict management, and communication techniques applied to allocation issues. Identification of alternative solutions from case studies, (Workshop 3) Pre: junior or senior standing. Staff
- **491, 492 Special Projects** (I and II, 1-3 each) Workshop for advanced students where individuals or small groups are assigned projects requiring the analysis of natural resource and allocation problems with particular emphasis on marine resources. (Independent Study) Pre: permission of chairperson. Staff
- 514 Economics of Marine Resources (1, 3) Role of economics in development of marine resources. Particular attention to problems of multiple use of resources and to the conflicts between private and public goals. (Lec. 3) Not for graduate credit in resource economics. Grigalunas
- 520 Production Economics (I, 2) Production in natural resource economics. The formulation and estimation of production functions. Technological change in economic growth and its measures. New directions in production theory and applications. (Lec. 2) Pre: 528 or permission of instructor. Staff
- 522 Mathematical Programming for Natural Resource Management (1, 2) Application of mathematical (linear) programming to typical natural resource management issues. Emphasis is placed on problem formulation and solution

- using existing computer software programs. (Lec. 2) Pre: 528 or permission of instructor. Gates
- 524 Dynamic Economic Models (II, 3) Fundamentals of dynamic economic theory and nonlinear models. Dynamic and nonlinear optimization techniques applied to resource economics. (Lec. 3) Pre: 528 or permission of instructor. In alternate years. Next offered spring 1997, Tyrrell
- 527 Macroeconomic Theory See Economics 527.
- 528 (or ECN 528) Microeconomic Theory (I, 3) Analytic tools of optimization. Neoclassical price and distribution theory. Linear programming and production theory. General equilibrium and welfare economics. (Lec. 3) Pre: ECN 328 and 375 or equivalent, or permission of instructor. Swallow
- 532 Land Resource Economics See Community Planning 537.
- 534 Economics of Natural Resources (II, 3) Microeconomic theory applied to problems of natural resource allocation. The rationale for government intervention in the market's provision of natural resources and alternative techniques for optimally allocated natural resources are investigated. (Lec. 3) Pre: 528 or permission of instructor. Wichelns
- 540 Applied Resource Economics (II, 3) Examines issues in agricultural and natural resource policy through applications of theoretical and empirical tools. Applications include pollution control, fisheries management, water, and agricultural policy. (Lec. 3) Pre: 528 or permission of instructor. Opaluch
- 543 Economic Structure of the Fishing Industry (1, 3) Analysis of fishing industries from the standpoint of activity and efficiency. Problems related to common property resources, government policy, labor, and legal and institutional factors. (Lec. 3) Pre: 514 or permission of instructor. In alternate years. Next offered fall 1996. Staff
- 576 Econometrics See Economics 576.
- 591, 592 Special Projects (I and II, 1-3 each) Advanced work under staff supervision arranged to suit the individual requirement of the student. (Independent Study) Pre: permission of chairperson. Staff
- 595 (or MAF 595, PSC 595, SOC 595) Problems of Modernization in Developing Nations (II, 3) Selected regional problems in the environmental complex, agricultural systems, popu-

lation dynamics, distribution systems, political integration, urbanization-industrialization, popular participation, integrated theories of modernization. (Lec. 3) Pre: permission of instructors. Krausse (marine affairs), Weaver (resource economics), and Poggie (sociology and anthropology)

- 598 Master's Nonthesis Research (I and II, 1-3) Credit for completion of major paper. (Independent Study) Pre: enrollment in nonthesis master's program in resource economics. Staff
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 602 Research Methodology (1, 3) Evaluation of alternative research methods and techniques. Development of specific research projects. (Lec. 2, Lab. 2) In alternate years. Next offered fall 1995. Gates and Weaver
- 610 Advanced Studies (I and II, 1-3) Advanced topics in resource economics. Mathematical models in resource management. (Independent Study) May be repeated with different topics. Staff
- 628 (or ECN 628) Advanced Microeconomic Theory (II, 3) Neoclassical value and distribution theory. Theories of imperfect competition, general equilibrium theory, and dynamic analysis. (Lec. 3) Pre: 528 or permission of instructor. In alternate years. Next offered fall 1996. Staff
- 630 Resource Analysis (II, 3) Development and application of welfare theory to natural resource use. Welfare concepts such as consumer surplus, producer surplus, and marginal cost pricing in policy decisions for agriculture and natural resources. (Lec. 3) Pre: 628 or permission of instructor. In alternate years. Next offered spring 1997. Staff
- 634 Economics of Resource Development (II, 3) Concepts of economic efficiency applied to natural resources with emphasis on intertemporal allocation of nonrenewable and renewable resources. Application of welfare and institutional economics to resource management and development; analysis of optimum allocation among users. (Lec. 3) Pre: 534 and 524 or permission of instructor. Sutinen
- 635 Marine Resources Policy (1, 3) Analysis of public policy problems relating to the development and management of marine resources, including fisheries, minerals, petroleum, water, and recreation. (Lec. 3) Pre: 534. In alternate years. Next offered spring 1996. Grigalunas

676 (or ECN 676) Advanced Econometrics (II, 4) A course covering the tools necessary for professional research in resource economics. Reviews the general linear model, but emphasis is on simultaneous equation models. Assumes a knowledge of introductory econometrics, statistical theory, and matrix algebra. (Lec. 4) Pre: 576 or its equivalent. Wessells

677 Econometric Applications in Resource Economics (II, 3) Special topics in econometrics as applied to agriculture and natural resources. Topics include time series models. Bayesian analysis and dichotomous dependent variables. (Lec. 3) Pre: 676. In alternate years. Next offered spring 1996. Staff

699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Russian (RUS)

Section Head: Professor Aronian

- 101 Beginning Russian I (I and II, 3) Introduction to fundamentals of grammar; exercises in speaking, reading, and writing. Emphasis on pronunciation, intonation, and aural comprehension of contemporary spoken Russian. Lanquage laboratory required. (Lec. 3) Pre: no prior Russian is required. Staff (F)
- 102 Beginning Russian II (I and II, 3) Continuation of 101. (Lec. 3) Pre: 101 or equivalent. Staff (F)
- 103 Intermediate Russian I (I and II, 3) Completion of fundamentals of grammar; exercises in speaking and writing, reading of contemporary texts; emphasis on distinction between spoken and written language. Language laboratory required. (Lec. 3) Pre: 102 or equivalent. Staff (F)
- 104 Intermediate Russian II (I and II, 3) Continuation of 103. (Lec. 3) Pre: 103 or equivalent. Staff (F)
- 205, 206 Advanced Russian (I and II, 3 each) Oral reports, written compositions, and classroom discussion based on readings in Russian history and culture, literature, and current Soviet affairs. Listening projects in laboratory. (Lec. 3) Pre: 104 or equivalent. Aronian
- 325, 326 Introduction to Literary Studies in Russian (I and II, 3 each) Techniques of literary criticism applied to Russian literary works in various genres. Listening projects in laboratory emphasizing poetry and drama. (Lec. 3) Pre: credit or concurrent enrollment in 205 and 206. In alternate years. Next offered 1996-97. Aronian (A)

- 391, 392 Masterpieces of Russian Literature (I and II, 3 each) Prose, poetry, and drama from late eighteenth through twentieth century in translation. Emphasis on literary movements through textual analysis. Authors range from Pushkin to Pasternak, including Dostoevsky and Tolstoy. (Lec. 3) Aronian (A) (F)
- 460, 461 The Russian Novel (I and II, 3 each) Major developments in themes and techniques, significant shifts of mode. Influences on the emergence of the novel in Russia. Laboratory required. (Lec. 3) Pre: credit or concurrent enrollment in 205 and 206. In alternote years. Next offered 1996-97. Aronian
- 497, 498 Directed Study (I and II, 3 each) For the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: acceptance of project by staff member and approval of section head. Staff

Sociology (SOC)

Chairperson: Professor Poggie (Sociology and Anthropology)

- 100 General Sociology (I and II, 3) Introductory description and analysis of the structure and dynamics of human society. Social norms, groups, intergroup relations, social change, stratification, and institutions. (Lec. 3) Staff (S)
- 102 Issues and Problems in Contemporary American Society (I or II, 3) Theoretical analysis of contemporary issues and societal trends and their impact on social organization. Social developments occurring after World War II analyzed and assessed according to their import and implications for social change. Emphasis on a sociological understanding of current issues. (Lec. 3) Not for major credit in sociology. Staff (S)
- 204 Social Psychology (I and II, 3) Examination of the social basis of self and behavior; emphasis on identity, motivation, attitude, social role, and the symbolic in social life. (Lec. 3) Staff (S)
- 206 Development of Human Societies (I or II, 3) Sociological perspective in which whole societies are the unit of analysis. Succession of hunting and gathering, horticultural, agrarian, industrial societies. Social change is central to approach; focus is on the place of technology in the changing sociocultural pattern. (Lec. 3) Staff (S)
- 212 The Family (I or II, 3) The family as a social institution, its uniformity and variability in historical time and social space. Emphasis on contemporary American family. Variation in institu-

- tional patterns by rural-urban residence, region, race, social class, Issues and conflicts in the contemporary family scene. (Lec. 3) Staff (S)
- 214 Urban Sociology (1 or II, 3) Patterns of urban development, taking into account sociological characteristics of urban life. Problems of urban redevelopment and planning. (Lec. 3) Staff (S)
- 216 Deviant Behavior (I or II, 3) Examination and analysis of major theories of deviant behavior. Application of these theories to particular types of deviant behavior, (Lec. 3) Staff (S)
- 224 Health, Illness, and Medical Care (I or II. 3) Introduction to social factors in the occurrence, distribution, and treatment of illness in society; critical analysis of the social organization of medicine in contemporary American society. (Lec. 3) Staff (S)
- 238 Population Problems (I or II, 3) Problems in the growth, decline, and composition of populations. Effects of fertility, mortality, migration. Special attention to American society. (Lec. 3) Shea (S)
- 240 Minority and Majority Relations (1 or 11, 3) Relations among the various ethnic, religious, racial, and political minorities and majorities, with special reference to the United States. (Lec. 3) Cunnigen (S)
- 241 Work and Society (I or II, 3) Work and the organizations of industry, work roles, work groups, and authority structures; labor-management relations; some aspects of industrialization. (Lec. 3) Staff (S)
- 242 Sex and Gender (I or II, 3) Current research exploring issues of sex and gender. Socialization, gender role playing, and personal relationships. Institutional costs of sexism. Prospects for human liberation. (Lec. 3) Reilly and Shea (S)
- 300 Topics in Sociology (I or II, 1-3) Critical study of selected topics. Subject will vary according to the expertise and availability of instructors. (Lec. 1-3) Pre: one 100- or 200-level sociology course. May be repeated for credit with different topic. Staff
- 301 Sociological Research Methods (I and II, 3) Scientific method in sociological research. Research design, data collection techniques, sampling measurement, table construction, and interpretation. Emphasis on critical reasoning and evaluation of sociological research. (Lec. 3) Pre: 9 credits in sociology including 100. Staff

- 314 Juvenile Delinquency (I or II, 3) Causes of delinquency; juvenile courts and probation; correctional institutions; programs of prevention. (Lec. 3) Pre: one 100- or 200-level sociology course. Staff
- 316 Social Welfare Institutions (I or II, 3) Development of British and American welfare. Influence of ideology on welfare and poverty. Contemporary American welfare, Social Security, poverty, welfare revolt of the 1960s. Evaluation of present and proposed welfare structure. (Lec. 3) Pre: one 100- or 200-level sociology course. Reilly (S)
- 318 Social Movements and Social Change (/ or II, 3) Analysis of theoretical perspectives, directions, patterns, and consequences of social change in relationship to social movements. Case studies of social movements with special emphasis on the civil rights movement. (Lec. 3) Pre: 6 credits in sociology. Staff
- 320 Formal Organizations (1 or 11, 3) Development, description, and analysis of types of formal organizations, from small-scale systems to modern large bureaucratic organizations, postbureaucratic forms such as open, egalitarian systems, and adhocracies. (Lec. 3) Pre: one 100- or 200-level sociology course. Staff
- 322 The Arts and Social Order (I or II, 3) Consideration of the relationship between the arts and socially established meanings, social structure, and societal myths, with special attention to consonant and dissonant functions of the arts for social cohesion. (Lec. 3) Pre: 6 credits in sociology or permission of instructor. Travisano
- 326 Madness and Society (I or II, 3) Phenomenon of mental disorder considered in light of recent research findings and developments in sociological theory. Mental disorder discussed as an outgrowth of societal processes. (Lec. 3) Pre: 6 credits in sociology or permission of instructor.
- 330 Criminology (I or II, 3) Nature and extent of crime; past and present theories of crime causation; criminal behavior in American society and its relation to personal and cultural conditions. (Lec. 3) Pre: one 100- or 200-level sociology course. Carroll (S)
- 331 Punishment and Corrections (I or II, 3) An overview and analysis of societal reactions to crime with emphasis on American society. Purposes of criminal sanctions, probation and parole, jails and prisons, capital punishment and its effect. (Lec. 3) Pre: one 100- or 200-level sociology course. Carroll

- 336 Social Inequality (I or II, 3) Dimensions and dynamics of inequality in society; concepts of class and status; processes of social mobility. (Lec. 3) Pre: one 100- or 200-level sociology course. Staff (S)
- 344 The Sociology of Religion (I or II, 3) Sociological theory and research in the analysis of interrelationships among religious culture, secular culture, the social structure of religious groups, and general social structure. (Lec. 3) Pre: one 100- or 200-level sociology course. Peters
- 346 Sociology of Knowledge (I or II, 3) Theories and research on the social bases of ideas. Emphasis on the works of Durkheim, Mannheim, and Marx and their influences on "common sense" interpretations of social life. (Seminar) Pre: one 100- or 200-level sociology course. Peters and Staff
- 350 Work and Family Life (1, 3) Linkages between economic and family institutions. Effects of work on family and of family on work. Historical development of the linkages. Contemporary effects due to men's decreasing and women's increasing labor force participation. (Lec. 3) Pre: 100 or 212 or HDF 330. Mederer
- 360 Introduction to Demographic Techniques (I or II, 3) Examination of demographic data sources; construction and analysis of techniques for examining the demographic variables of size, composition, and distribution and the demographic processes of fertility, mortality, and migration; consideration of methods for making estimates and projections. (Lec. 3) Pre: 238 or permission of instructor. Shea
- 401 History of Sociological Thought (I and II, 3) Development of sociology as reflected in writings of American and European scholars: Plato, Aristotle, Rousseau, Vico, Spencer, Durkheim, Marx, Weber, Veblen, R. Merton, Parson, and others. (Seminar) Pre: 100 and 6 credits in sociology. Staff
- 402 Sociology in Applied and Community Settings (I and II, 3) Field experience and research in applying sociological concepts and methods to problems of community agencies and settings. Formulating and developing approaches to ongoing social systems; introduction to program analysis and evaluation. (Practicum) Pre: 301. Open only to sociology majors. May be repeated for a maximum of 6 credits. Not for graduate credit. Reilly and Staff
- 408 Individual Life and Social Order (I or II, 3) Sociology of the individual as a creative participant in social order. Emphasis on cultural symbolism in the development of personal idiom,

- social structure, and social change. (Lec. 3) Pre: 9 credits in sociology or permission of instructor. Travisano
- 413 Sexual Inequality (1 or 11, 3) Development of sexual inequality. Critique of various theories explaining inequality. Sociological interpretation of theories of sexuality. Some effects of inequality: American women; minority women; women's work. Discussion of liberation and androgyny. (Seminar) Pre: 242 or permission of instructor. In alternate years. Reilly and Shea
- 416 Fertility: A Demographic Analysis (I or II, 3) Examination of theories of fertility: fertility levels, trends, and differentials; fertility control; policy and research issues; emphasis on the U.S. population. (Seminar) Pre: 238 or permission of instructor. Shea
- 420 Family Violence (I or II, 3) Examination and analysis of the incidence, types, and causes of violence between family members, including child abuse, wife abuse, and abuse of the elderly. (Seminar) Pre: 100 or 102 or permission of instructor. Gelles
- 424 Health Care Delivery Systems (I or II, 3) Contemporary issues in health care delivery; dynamics and problems in health care rationing; incentives to demedicalize, and promotion of competition. (Lec. 3) Pre: one 300-level sociology or anthropology course or permission of instructor. Students may not receive credit for both 424 and 524. Staff
- 428 Institutional Racism (I, 3) Consideration of varying models of race and ethnic relations; examination of recent research on issues such as residential segregation, school desegregation, affirmative action, and racial disorders; comparisons of United States with other societies. (Seminar) Pre: one 300-level sociology course or permission of instructor. In alternate years. Cunnigen
- 430 (or PSY 430) Intimate Relationships (I or II, 3) Examination of the effects of cultural, social, and psychological processes in the development, maintenance, and dissolution of intimate relationships. Emphasis on friendship patterns, dating and marital relationships, intimacy in nontraditional relationships. Emphasis on research. (Lec. 3) Pre: any 100- or 200-level course in sociology or PSY 113 and permission of instructor. Not for graduate credit. Albert
- 432 (or LRS 432) Industrial Sociology (I or II, 3) The social structure of industrial organizations; institutional patterns of conflict and cooperation; the impact of the political process; current issues in industry. (Lec. 3) Pre: 100 or permission of instructor. Staff

- 437 Law and Families in the United States See Human Development and Family Studies 437.
- 438 Aging in Society (II, 3) Social theories of growing old in a changing society. Organizational and sociohistorical factors are examined in terms of their consequences for the present status of the aged. (Lec. 3) Pre: one 300-level course in sociology or permission of instructor. Staff
- 452 Class and Power (II, 3) Class structures and patterns of power in advanced societies; comparisons of inequality in capitalist and socialist societies; theories of the relation between class and power; class consciousness, conflict, and accommodation. (Lec. 3) Pre: 336 or permission of instructor. In alternate years. Staff
- 470, 471 Independent Study (I and II, 3 each) Areas of special research not covered in other courses. May be taken as honors courses. (Independent Study) Pre: one 300-level sociology course and permission of instructor. Staff
- 473 Topics in Sociological Research (I and II, 3) Original sociology research conducted on a topic selected by the student in conjunction with a faculty member. Students will be evaluated on the basis of work submitted to the instructor. (Independent Study) Pre: permission of instructor. May be repeated once on the same topic. Staff
- 474 Criminal Justice System See Political Science 474.
- 475 (or PSC 475) Behavior Systems in Crime (1, 3) Criminal behavior studied in categories useful for sociological analysis. Linkages of criminal behavior systems to the larger society; behavior systems in causal theorizing, justice, prevention, and corrections. (Seminar) Pre: 330 or equivalent. In alternate years. Carroll
- 495 Senior Seminar in Sociology (I and II, 3) Critical examination of selected topics in sociology. Particular topics for examination will be selected by the course instructor. Required for students in the B.A. program in sociology. (Seminar) Pre: senior standing; open only to sociology majors. Not for graduate credit. Staff
- 505 Public Program Evaluation See Political Science 505.
- 522 (or PSC 522) Issues in Corrections (II, 3) Justifications for punishment and corrections; historical development; intensive survey of current research on deterrence, effectiveness of treatment, prison, violence, and other issues.

- (Seminar) Pre: 330, STA 308, SOC 475, or permission of instructor. In alternate years. Carroll
- 595 Problems of Modernization in Developing Nations

See Resource Economics 595.

Spanish (SPA)

Section Head: Professor Gitlitz

- 101 Beginning Spanish I (I and II, 3) Introduction to Spanish for beginners. (Lec. 3) Pre: no prior Spanish is required. Staff (F)
- 102 Beginning Spanish II (I and II, 3) Continuation of 101. (Lec. 3) Pre: 101 or equivalent. Staff (F)
- 103 Intermediate Spanish I (I and II, 3) Reading and discussion of representative authors, grammar review, and continued practice in language skills to broaden understanding of Hispanic culture. (Lec. 3) Pre: 102 or equivalent. Staff (F)
- 104 Intermediate Spanish II (I and II, 3) Continuation of 103. (Lec. 3) Pre: 103 or equivalent. Staff (F)
- 131 Refresher Course in Spanish (I and II, 3) Rapid one-semester review of beginning Spanish structures and vocabulary. For students with one or two years of high school Spanish who are not ready for 103 or higher level, and who have taken the placement examination. (Lec. 3) Pre: one or two years of precollege Spanish or permission of section head. Not open to students with credit in 101 or 102. Staff (F)
- 201 Oral Expression in Spanish (I or II, 3) Development of oral skills in Spanish through discussion, interpreting, and reports on topics of personal, practical, or cultural interest. (Lec. 3) Pre: 104. Staff
- 205 Spanish Language and Style I (I and II, 3) Development and refinement of all Spanish language skills, with emphasis on writing, through structured practice using Hispanic cultural and literary materials. (Lec. 3) Pre: 104 or equivalent. Staff
- 206 Spanish Language and Style II (I and II, 3) Continuation of 205. (Lec. 3) Pre: 205 or equivalent. Staff
- 305 Early Spanish-American Literature and Culture (II, 3) Study of the early development of Spanish-American culture through its literature, from Conquest to Independence. (Lec. 3) Pre: 206 or permission of instructor. Staff

- 306 Modern Spanish-American Literature and Culture (1 or II, 3) Significant figures and developments in literature, the arts, and society, from Independence to the present. (Lec. 3) Pre: 206 or permission of instructor. Staff (A)
- 307 Hispanic Culture Through the Seventeenth Century (II, 3) Significant contributions in literature and the arts, from the unique period of coexistence of Christians, Jews, and Muslims through the Golden Age of the sixteenth and seventeenth centuries. (Lec. 3) Pre: 206. In alternate years. Staff
- 308 Literature and Culture of Modern Spain (II, 3) Major figures and developments in Spanish literature, the arts, and society from the eighteenth century to the present. (Lec. 3) Pre: 206 or permission of instructor. In alternate years.
- 310 Field Workshop (SS, 1-6) Cultural visit to Spain or Hispanic America. Significant monuments and places of interest to the student of literature and civilization will be studied. Lectures supplemented by assigned readings. (Workshop) Pre: 104 or permission of instructor.
- 312 Advanced Spanish (I and II, 3) Problematic aspects of Spanish grammar; proper syntax and word usage in speaking, translation, and writing at sophisticated levels; correct reproduction of sounds and intonation patterns. (Lec. 3) Pre: 206 or permission of instructor. Staff
- 315 Practicum in Community Work (I and II, 3) Practical application of Spanish in a community agency, school, or business. Individual project developed by student under guidance of a Spanish faculty member. Requires a minimum of 120 hours. (Practicum) Pre: 206 and permission of instructor. Staff
- 325 Introduction to Literary Genres (1, 3) Presentation of the novel, poetry, drama, and essay as literary genres. Textual commentary and methods of criticism. (Lec. 3) Pre: 206 or permission of instructor. Trubiano and Staff
- 391, 392 Spanish Literature in Translation (/ and II, 3 each) Reading and analysis in English of Spain's most significant contributions to world literature: poetry, novel, drama, essay. Works through the seventeenth century in the first semester; those of the nineteenth and twentieth in the second. (Lec. 3) Not for major credit in Spanish. Staff (A) (F) for 391; (A) for 392.
- 393 Modern Hispanic-American Literature in Translation (I or II, 3) Introduction to the development of Latin-American literature in the

- twentieth century and an examination of how the literary artifact has reflected the major social and political changes of the region. (Lec. 3) Not for major credit in Spanish. Staff (A) (F)
- 401 Oral and Dramatic Presentation of Hispanic Literature (1, 3) Practice in effective oral communication in Spanish and appreciation of Hispanic literature through analysis and class presentation of drama, poetry, and prose. (Lec. 3) Pre: 325 or permission of instructor. Navascués
- 421 Business Spanish (I or II, 3) Study of concepts and terminology in the Spanish-speaking business world. (Lec. 3) Pre: credit or concurrent enrollment in a 300-level Spanish course. Not for graduate credit in Spanish. Staff
- 430 Castilian Prose of the Sixteenth and Seventeenth Centuries (II, 3) Literary significance of the Renaissance and Baroque periods and an analysis and critical examination of the prose works of the principal writers of this Golden Age of Castilian Literature. (Lec. 3) Pre: 325 or permission of instructor. Gitlitz or Trubiano
- 431 Drama and Poetry of the Sixteenth and Seventeenth Centuries (II, 3) Spanish poetry and drama from the early Renaissance through the Baroque. (Lec. 3) Pre: 325 or permission of instructor. Trubiano or Gitlitz
- 450 Romanticism and Realism (II, 3) Nineteenth-century Spanish literature of the romantic and realist movements. Examples of drama, poetry, and prose as they reflect evolving concerns of the modern writer and society. (Lec. 3) Pre: 325 or permission of instructor. Navascués or Trubiano
- 470 Topics in Hispanic Literature (I and II, 3) Special topics or authors not emphasized in other courses. (Seminar) Pre: 325 or permission of instructor, Staff
- 481 Don Quijote (I, 3) Life and times of Miguel de Cervantes Saavedra and the reading and critical interpretation of his work. El ingenioso hildalgo Don Quijote de la Mancha. (Lec. 3) Pre: 325 or permission of instructor. Required for Spanish majors. In alternate years. Staff
- 485 Modern Spanish Narrative (II, 3) Representative narrative works by Spain's major authors from the Generation of 1898 to the present. (Lec. 3) Pre: 325 or permission of instructor. Manteiga
- 486 Modern Spanish Poetry and Drama (II, 3) Selected poetry and plays from the nineteenth century through the present. (Lec. 3) Pre: 325 or permission of instructor. Manteiga

- 488 Spanish-American Poetry and Drama (I or II. 3) Traces the development of poetic expression and drama from the seventeenth century to modern times as a reflection of the evolution of Spanish-American identity. (Lec. 3) Pre: 325 or permission of instructor. Morín
- 489 The Spanish-American Narrative (I or II, 3) Traces the development of fictional prose in Spanish America from the colonial period to modern times as a reflection of cultural and societal changes. (Lec. 3) Pre: 325 or permission of instructor. Morin or White
- 497, 498 Directed Study (I and II, 1-3 each) For the advanced student. Individual research and reports on problems of special interest. (Independent Study) Pre: 325, acceptance of project by staff member, and approval of section head. Staff
- 510 Contemporary Spanish Workshop (SS, 3-6) New developments in all areas of Hispanic studies including pedagogical matters and classroom techniques. (Workshop) Pre: graduate standing or permission of instructor. Staff
- 561 Seminar in Medieval Poetry and Prose (I, 3) Examination and analysis of the epic, lyrical, and narrative medieval literature of Spain and its impact on subsequent literature. (Seminar) Pre: graduate standing or permission of instructor. Trubiano, Navascués, or Gitlitz
- 570 Topics in Hispanic Literature and Culture (1, 11, or SS, 3) Special topics or authors not emphasized in other courses, (Seminar) Pre: graduate standing or permission of instructor. Staff
- 572 Evolution of Spanish-American Culture and Thought (II, 3) Development of Spanish-American thought and cultural trends, as portrayed in major works of artists and thinkers. (Lec. 3) Pre: graduate standing or permission of instructor. Next offered spring 1996. Morín or
- 574 Interpretations of Modern Spanish-American Thought (I or II, 3) Topics of interest in the development of modern Spanish-American thought as represented in the essay from the period of independence to the present. (Seminar) Pre: graduate standing or permission of instructor. Morín or White
- 580 Seminar in Nineteenth-Century Spanish Literature (1 or II, 3) Selected authors and topics from the Spanish Romantic movement through realism and naturalism. (Seminar) Pre: graduate standing or permission of instructor. May be repeated with different topic and permission of instructor. Navascués or Trubiano

584 Interpretations of Modern Spain (1, 3) Development of Spanish thought particularly with respect to sociological and cultural problems from the eighteenth century to the contemporary period as seen through the writings of significant essayists. (Lec. 3) Pre: graduate standing or permission of instructor. In alternate years. Manteiga or Navascués

585 Seminar in Twentieth-Century Spanish Literature (1, 3) Topics of aesthetic, cultural, and linguistic concern in twentieth-century peninsular literature. (Seminar) Pre: graduate standing or permissian of instructor. May be repeated with different topic and permission of instructor. Manteiga

587 Seminar in Renaissance and Baroque Literature (II, 3) Aesthetic analysis of works representative of the period and their influence on subsequent literatures. (Seminar) Pre: graduate standing or permission of instructor. May be repeated with different topic and permission of instructor, Trubiano or Gitlitz

588 Seminar in Colonial Spanish-American Literature and Culture (I or II, 3) Topics of interest dealing with the development of Spanish-American cultural identity and literature from the period of discovery and colonization to independence. (Seminar) Pre: graduate standing or permission of instructor. Morin or White

589 Seminar in Modern Spanish-American Literature and Culture (I or II, 3) Topics of interest dealing with the development of Spanish-American literature and culture from the period of independence to the present. (Seminar) Pre: araduate standing or permission of instructor. May be repeated with different topic. Morin or White

590 The Hispanic Presence in the United States (II, 3) A study of the establishment of the Hispanic presence and its heritage in the art, folklore, and language of the United States, and an analysis of the literature of the Spanishspeaking peoples. (Lec. 3) Pre: graduate standing or permission of instructor. In alternate years. Staff

597, 598 Directed Study (I and II, 3 each) Individual research and reports on problems of special interest. (Independent Study) Pre: graduate standing and approval of the director of graduate studies. May be repeated with different topic. Staff

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Statistics (STA)

Section Head: Professor Hanumara

220 Statistics in Modern Society (I and II, 3) Elementary concepts in sampling, polls, surveys, random samples. Foundations of statistical inference; estimation, comparison prediction. Statistics for the consumer, quality of data, credibility of statistical evidence. Environmental measurements and experiments. (Lec. 2, Rec. 1) Staff (M)

307 Introductory Biostatistics (II, 3) Statistical methods applicable to health sciences. Data presentation. Vital statistics and life tables. Fitting models to health data. Testing, estimation, analysis of cross-classifications, regression, correlation. (Lec. 2, Rec. 1) Pre: MTH 107 or 108. Not open to students with credit in 308 or 409. Staff

308 Introductory Statistics (I and II, 3) Descriptive statistics, presentation of data, averages, measures of variation, skewness, kurtosis. Elementary probability, binomial and normal distributions. Sampling distributions. Statistical inference, estimation, confidence intervals, testing hypotheses, linear regression, and correlation. (Lec. 2, Rec. 1) Pre; MTH 107 or 108. Not open to students with credit in 307 or 409. Staff

409 Statistical Methods in Research I (I and II, 3) Same as 308, but is for students who have better mathematical preparation. (Lec. 3) Pre: MTH 132 or 142. Not open to students with credit in 307 or 308. Staff

411 (or PHP 411) Biostatistics II (II, 3) An overview of statistical methods used in performing research in pharmacotherapeutics and pharmacoepidemiology. Emphasis will be on understanding both common study designs and the output from statistical analysis of data obtained from these studies. (Lec. 3) Pre: an introductory statistics course (i.e., 307) or permission of instructor, Staff

412 Statistical Methods in Research II (I and II, 3) Multiple linear regression and correlation analysis, curvilinear regression. Analysis of variance and covariance. Analysis of enumerative data. Some nonparametric methods. (Lec. 3) Pre: 307 or 308 or 409. Staff

413 Data Analysis (1, 3) Exploring data from experimental trials, sample surveys, multivariate studies; weighing chances, detecting patterns, identifying outliers, finding models; elementary computational procedures. (Lec. 3) Pre: 307 or 308 or 409 and CSC 201. Staff

415 Introduction to Experimental Design (1, 3) Experimental units and replication. Nesting. Reduction of variance: blocking, concomitant

variables. Commonly used designs: completely randomized, randomized blocks, split plots. Factorial arrangement of treatments, confounding. Incomplete block designs. (Lec. 3) Pre: 412. Not for graduate credit. Staff

416 Survey of Advanced Statistical Methods (II, 3) Selected topics for multivariate, nonparametric and sampling methodology. Multivariate normal, Hotelling's T2, discriminant function; rank tests; simple random sampling, stratified sampling, cluster sampling, and systematic sampling. (Lec. 3) Pre: 412. Not for graduate credit. Staff

491 Directed Study in Statistics (I and II, 1–3) Advanced work in statistics. Conducted as supervised individual projects. (Independent Study) Pre: permission of chairperson. S/U credit. Staff

492 Special Topics in Statistics (I or II, 3) Advanced topics of current interest in statistics. (Lec. 3) Pre: permission of chairperson. Staff

500 Nonparametric Statistical Methods (I or II, 3) Rank and sign tests, permutation tests and randomization, run test, tests of goodness of fit, order statistics, estimation, and comparison with parametric procedures. Examples illustrating the applications of nonparametric techniques. (Lec. 3) Pre: 409. Staff

501 Analysis of Variance and Variance Components (I or II, 3) Analysis of variance and covariance, experimental design models, factorial experiments, random and mixed models, estimation of variance components, unbalanced data. (Lec. 3) Pre: 412. Staff

502 Applied Regression Analysis (1 or 11, 3) Topics in regression analysis including subset selection, biased estimation, ridge regression, and nonlinear estimation. (Lec. 3) Pre: 412. Staff

517 Small N Designs See Psychology 517.

520 Fundamentals of Sampling and Applications (I or II, 3) Simple random sampling; properties of estimates, confidence limits. Sample size. Stratified random sampling; optimum allocation, effects of errors, and quota sampling. Regression and ratio estimates; systematic and multistage sampling. (Lec. 3) Pre: 308 or 409. Staff

532 (or ASP 532 or PSY 532) Experimental Design (1, 3) Application of statistical methods to biological and psychological research and experimentation. Experimental situations for which various ANOVA and ANCOVA designs are most suitable. (Lec. 3) Pre: 409 or equivalent. Staff

535 Statistical Methodology in Clinical Trials (II, 3) Bioavailability, dose response models. crossover and parallel designs, group seguential designs, survival analysis, meta analysis, (Lec. 3) Pre: 409, 411, or 412 or permission of instructor. Staff

541 Multivariate Statistical Methods (I or II, 3) Review of matrix analysis. Multivariate normal distribution. Tests of hypotheses on means, Hotelling's T2, discriminate functions. Multivariate regression analysis. Canonical correlations. Principal components. Factor analysis. (Lec. 3) Pre: 412. Staff

542 Discrete Multivariate Methods (I or II, 3) Analysis of multidimensional categorical data by use of log-linear and logit models. Discussion of methods to estimate and select models followed by examples from several areas. (Lec. 3) Pre: 412. Staff

550 Ecological Statistics (1, 3) Application of statistical methodology to the following topics: population growth, interactions of populations, sampling and modeling of ecological populations, spatial patterns, species abundance relations, and ecological diversity and measurement. (Lec. 3) Pre: 409 or permission of instructor. Staff

576 Econometrics See Economics 576.

584 Pattern Recognition See Electrical Engineering 584.

591 Directed Study in Statistics (I and II, 1-3) Advanced work in experimental statistics conducted as supervised individual projects. (Independent Study) Pre: permission of chairperson. S/U credit. Staff

592 Special Topics in Statistics (I or II, 3) Advanced topics of current interest in experimental statistics. (Lec. 3) Pre: permission of chairperson. Staff

599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

610 Parsimony Methods See Psychology 610.

611 Linear Statistical Models (I or II, 3) Review of mathematical and statistical concepts. Multivariate normal distribution. Distribution of quadratic forms. Power of the F-test. Basic linear models: general linear hypothesis, regression models, experimental design models, variance component models, mixed models. (Lec. 3) Pre: 501 or 502. Staff

612 Structural Modeling See Psychology 612.

In addition to statistics courses offered by the Department of Computer Science and Statistics under the STA code, there are a number of statistics courses offered by other departments:

Business Analysis and Computing 201, 202 Managerial Statistics I and II 530 Statistical Methods for Management

Industrial and Manufacturing Engineering

- 411 Probability for Engineers
- 412 Statistics for Engineers
- 513 Statistical Quality Assurance
- 533 Advanced Statistical Methods for Research and Industry
- 634 Design and Analysis of Industrial Experiments

Management Science and Information Systems

- 450 Forecasting
- 455 Analysis of Managerial Data
- 470 Advanced Managerial Decision Support
- 480 Managerial Application of Simulation
- 601 Business Research Methods: Linear Models
- 602 Business Research Methods: Multivariate
- 630 Management Statistics with SAS and Personal Computer Software
- 675 Applied Time Series Methods and Business Forecasting

Mathematics

- 451 Introduction to Probability and Statistics
- 452 Mathematical Statistics
- 550 Probability and Stochastic Processes
- 551 Mathematical Statistics

Psychology

- 300 Quantitative Methods in Psychology
- 533 Advanced Quantitative Methods in Psychology

Textiles, Fashion Merchandising, and Design (TMD)

Chairperson: Professor Welters

103 Consumer Issues in Textiles and Clothing (I and II, 3) Effect of fibers, yarns, fabrics, and finishes on appearance, performance, and cost. Impact of environmental and consumer safety, labeling, energy conservation, and fashion on the development of textiles, laundry equipment, and detergents. (Lec. 3) Proficiency test available.

216 Interior Design I (I and II, 3) Discussions and problems to develop discrimination and creative ability in selection of adequate and well-designed home furnishings, (Lec. 3) Higa

222 Apparel Production (1, 3) Analysis of apparel construction and production; current industrial and technological developments. Discussion of sizing and quality standards with emphasis on identification of fabrics, garment styles, findings, and trims. (Lec. 3) Pre: 103.

224 Clothing and Human Behavior (I and II, 3) Physical, social, and psychological aspects of dress related to: the individual, cultural and social groups, consumer behavior, clothing needs of special groups, and patterns of change and stability in dress. (Lec. 3) Proficiency test available. Perry (S)

232 Fashion Retailing (I and II, 3) A comprehensive study of fashion retailing as an operating system. Examination of the strategies and the organizational structure which support the fashion retail system. (Lec. 3) Harps-Logan

238 Surface Design (SS, 3) History, classification, and traditional processes for surfacedesigned textiles. Introduction to screen printing and block printing. Emphasis on resist dyeing and painting. (Lec. 2, Lab. 2) Staff

240 Development of Contemporary Fashion (1, 3) History of contemporary fashion from the beginning of the twentieth century to the present. Influence of designers, buyers, consumers, and technology on fashion in the marketplace. (Lec. 3) Pre: 103 and sophomore standing. Welters

303 Textile Science (I and II, 3) Current textiles and textile products. Scientific aspects of fibers, yarns, fabrication, and finishes for apparel and home furnishings. Study of existing regulatory controls and policies as they affect the consumer. (Lec. 3) Pre: 103 and CHM 124 or permission of instructor. Bide

313 Textile Science Laboratory (1 and 11, 1) Laboratory exercises include fiber identification, fabric analysis, and fabric performance testing. A written project and oral presentation on fabric performance are required. Students furnish their own fabric for performance testing. (Lab. 2) Pre: 103, CHM 124, 126, and concurrent enrollment in 303. Bide

316 Housing Space and Function (II, 3) Fundamental principles of house planning concerning orientation, space relationships, function, flexibility, aesthetic and economic factors. (Lec. 2, Lab. 2) Pre: 216. Higa

- 325 Apparel I (I, 4) Principles of garment production as related to construction, fit, performance, quality, and cost. Construction techniques, sizing, material evaluation and assembly management. Quality analysis and introduction to computer-aided design. (Lec. 2, Lab. 4) Perry
- 327 Apparel Design (I and II, 3) Design principles as applied to contemporary clothing with emphasis on various age groups and special populations. Laboratory experiences concentrate on the creative process and development of illustrative techniques. (Lec. 2, Lab. 2) Staff
- 332 Fashion Merchandise Buying (1, 3) The theory of fashion merchandising and its application to basic retailing procedures, the responsibility of the buyer, and procedures used to determine consumer demand, merchandise selection, and pricing. (Lec. 3) Pre: 103, 224, and 232. Harps-Logan
- 335 Apparel II (II, 4) Application of flat pattern design and draping techniques. Special emphasis on computer-aided design application as related to sizing, sloper development, and pattern drafting. Creative laboratory processes from design to finished product. (Lec. 2, Lab. 4) Pre: 325 or permission of instructor. Perry
- 336 Fabrics for Interiors (1, 3) The design, manufacturing, selection, installation, and performance of interior fabrics. Labeling, warranty programs, testing and safety requirements for both residential and commercial uses. (Lec. 3) Pre: 216, 303, 313, or equivalent course work. Next offered fall 1995, Helms
- 340 Historic Costume (1, 3) Sociological, economic, religious, and political factors affecting the history of costume and resulting fashion changes from antiquity to the early twentieth century. Use of department's historic costume collection. (Lec. 3) Ordoñez
- 342 Fashion Study Tour (II, 1) Students spend two weeks overseas during intersession studying the apparel and/or interior furnishings market in London and Paris. Lectures and tours by designers, manufacturers, and retailers. Students may register once in apparel and once in interior furnishings. Travel costs are extra. (Practicum) Pre: junior standing or permission of instructor. Ordoñez
- 358 Weaving (II, 3) Introduction to hand weaving, including on-loom and off-loom techniques. Designing, drafting, warping, and finishing of various types of weaves. Students complete samplers and projects. (Lec. 1, Lab. 4) Staff

- 361, 362 Special Problems (I and II, 1-4 each) Open to qualified juniors and seniors who wish to do advanced work. (Independent Study) Pre: approval of application by instructor and chairperson. May be repeated for a maximum of 6 credits. Staff
- 402 Seminar in Textiles and Clothing (II, 1-2) Recent developments in manufacturing, marketing, and retailing of textile products. Discussion of fashion issues and impact on consumer. Lectures by speakers from business, industry, and government. (Lec. 1-2) Pre: junior or senior standing or permission of instructor. May be repeated once. Helms
- 403 Textile Performance (1, 3) Analysis of textiles using test methods and standards adopted by government, industry, and buyers to insure consumer satisfaction, Interpretation of test data in relation to consumer expectations and performance claims. (Lec. 2, Lab. 2) Pre: 103 and 303 or permission af instructor. Bide
- 406 Historic Furniture (1, 3) Chronological study of the development of furniture, factors that influence style and production, characteristics of style, and influence of historic furniture on later periods. (Lec. 3) Higa
- 413 Dyeing and Finishing of Textiles (II, 3) Study of chemical and physical interactions of dyes and finishes with textile fiber/fabric systems. Evaluation of application techniques. Detection and evaluation of problems resulting from dyeing and finishing. (Lec. 2, Lab. 2) Pre: 303 or permission of instructor. Bide
- 416 Interior Design II (I, 3) Observation and experience in professional interior design with emphasis on meeting living needs of individuals and groups. Field trips, laboratory applications, and quest lecturers. (Lec. 2, Lab. 2) Pre: 316 or permission of instructor. Higa
- 422 Field Experience in Fashion Merchandising (1, 5) Field experience in business establishment. Students work (150 hours per semester minimum) under qualified personnel and are placed and supervised by University staff. Seminar (1 hour per week) concerning the merchandising of textile and related products is required. (Practicum) Pre: 303, 332, permission of instructor and advisor. Not for graduate credit in textiles, fashion merchandising, and design. Harps-Logan
- 424 Fashion Theory and Analysis (1 or 11, 3) Principles, theories, and recent investigations of the fashion process are presented to develop analytical skills for evaluating consumer behav-

- ior, as related to clothing and adornment. Application to contemporary trends. (Lec. 3) Pre: senior or graduate standing. Staff
- 432 Fashion Merchandising Operations Control (II, 3) Analysis of determinants of fashion merchandising profitability below gross margin; expense analysis, classification, allocating expense center accounting, and key operating ratios. Emphasis upon modification and control of selling cost ratios. (Lec. 3) Pre: 232 and 332. Harps-Logan
- 433 Textile Markets (I and II, 3) Study of social, economic, and political issues that affect the development, production, and marketing of textile products. Study of the textile needs of the apparel, home furnishings, industrial, and medical industries. (Lec. 3) Pre: 303 and ECN 201 and 202. Helms
- 440 Historic Textiles (II, 3) Chronological study of textiles, emphasizing socioeconomic, religious, and political influences. Contribution of designers, inventors, trade groups, and industrialists. (Lec. 3) Pre: 103 or permission of chairperson. Ordoñez
- 453 Textiles: A Global Perspective (II, 3) An international perspective on the manufacturing and marketing of textile products, which will develop a global overview of trade and trade policy. (Lec. 3) Pre: senior standing or permission of instructor. Helms
- 461, 462 Community Field Work (I and II, 1-4 each) Field work and seminar open to qualified seniors who wish to work in federal or state agencies, community programs, or industry, under the supervision of a faculty advisor. (Practicum) Pre: approval of application by instructor and chairperson prior to enrollment. Not for graduote credit in textiles, fashion merchandising, and design. Staff
- 496 Interior Furnishing and Design Internship (II, 3) Students intern (120 hours per semester minimum) in the area of interior space planning, furniture, interior textiles, furnishings, or research. A weekly one-hour seminar for presentation of intern experience or research. (Practicum) Pre: permission of instructor, Higa
- 500 Ethnic Costume and Textiles (1; 3) Survey of regional styles of costume and textiles from all areas of the world, excluding fashionable dress. Influence of social, economic, technological, and aesthetic factors. (Lec. 3) Pre: 224 or equivalent, 340, 440, or permission of instructor. In alternate years. Next offered fall 1996. Welters

- 503 Topics in Textile Science (I, II, or SS, 3) Advanced study in a particular area of textile science. One topic will be studied from a list that includes dyeing, finishing, printing, polymer and fiber chemistry, dyestuff chemistry, and color science. (Lec. 2, Lab. 2) Pre: graduate standing, 303 or equivalent, or permission of instructor. May be repeated up to three times with different topics. Bide
- 510 Research Methods in Textiles (I or II, 3) Application of research methodology to the study of textiles and clothing. Approach is multidisciplinary in that experimental, social science, and historic methods are covered. (Lec. 3) Pre: graduate standing or permission of instructor. Welters
- 513 Detergency (I, 3) Study of chemical and mechanical interactions of textile fibers, fabrics, laundering products, equipment, and soils. Laboratory experience in evaluation of laundry products and fabric durability during laundering. (Lec. 2, Lab. 2) Pre: graduate standing, 303 or equivalent, or permission of instructor. Ordoñez
- 520 Introduction to Textile Conservation (I or II, 3) Survey of methods used to clean, repair, store, and display historic textiles and costumes. Laboratory experience in conservation practices. (Lec. 2, Lab. 2) Pre: a textile science course and historic textiles or costume course, or permission of instructor. Next offered fall 1996. Ordoñez
- 521 Topics in Textile Conservation (II, 1-3) Investigation of textile conservation theory and methodology. Some topics will include laboratory assignments. (Lec. 1-3) Pre: 520 or experience in textile conservation, and permission of instructor. May be repeated with different topic. Spring 1996: Wet Cleaning, Ordoñez
- 522 Special Problems in Textile Conservation (I or II, 1-3) Supervised independent studies on specific textile conservation projects or research. (Independent Study) Pre: 520 or experience in textile conservation, and permission of instructor. May be repeated for a maximum of 6 credits. Ordoñez
- 524 Social and Psychological Aspects of Textiles and Clothing (II, 3) Seminar in social and psychological aspects of textiles and clothing. Theories and assumptions concerning relevance of clothing to individuals and groups. (Lec. 3) Pre: 224 or permission of instructor. Next offered spring 1996. Staff
- 530 Historic Textile Internship (I and II, 2-4) Supervised internship designed to introduce the student to management of textile and costume

- collections in a museum or historical society setting. Individually designed to suit student needs: conservation, education, and research. (Practicum) Pre: 510, 520, araduate standing in textiles, fashion merchandising, and design, or permission of chairperson. Welters or Ordoñez
- 532 Consumer Behavior in Fashion Retailing (I or II, 3) Use by fashion retailing management of explanatory and predictive models of consumer behavior relating to fashion merchandising in establishing retail policy and strategy. (Lec. 3) Pre: graduate standing or permission of instructor. Next offered spring 1996. Harps-Logan
- 540 Special Problems in Textiles and Clothing (I and II, 3) Supervised independent study in specific areas of textiles and clothing. (Independent Study) Pre: permission of chairperson. Staff
- 542 Fashion Promotion (1, 3) Emphasis on understanding and applying the principles of fashion retailing communication. Evaluation and application of effective promotional activities such as visual merchandising and fashion shows to trade and retail levels of fashion merchandising. (Lec. 3) Pre: graduate standing or permission of instructor. Harps-Logan
- 552 Retail Price Strategy (1 or II, 3) Economic, financial, legal, and fashion retailing principles are examined and integrated into a functional model in order to analyze management's pricing decisions and strategies for fashion merchandise. (Lec. 3) Pre: graduate standing or permission of instructor, Harps-Logan
- 570 Topics in Historic Textiles or Costume (/ or II, 3) Advanced study in a particular area of historic textiles or costume using artifactual and documentary primary sources. Use of historic textile and costume collection. (Lec. 3) Pre: 340. 440 or equivalent. May be repeated for a maximum of 6 credits. Welters
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.

Theatre (THE)

Chairperson: Professor Swift

Courses in theatre offer theory, production, design, and perfarmance training in various areas of dramatic arts, and many are open to nonmajors. The Department of Theatre conducts open auditions and makes performance and production work available to all members of the University community.

- 100 Introduction to Theatre (I and II, 3) Designed to provide students with a theoretical and practical understanding of the theatrical process as well as to develop critical standards and increase the enjoyment of theatre as an art. (Lec. 2, Lab. 4) Not open to theatre majors. Staff (A)
- 111 Introduction to Acting (I and II, 3) Designed to initiate students to theatre as a collaborative art through systematic exposure to the principles and techniques of acting, directing, stage design, stagecraft, and playwriting. Participation in productions required. (Studio 6)
- 117 Introduction to Voice and Movement (II, 3) An exploration of the body and voice as instruments with emphasis on the development of physical and vocal awareness, concentration, maintenance, and endurance. (Studio 6) Guest
- 161 Introduction to Stagecraft (I and II, 3) Stage carpentry, rigging, properties, scene painting, and lighting mechanics with practical experience working on productions. (Lec. 2, Lab. 2) Galgoczy
- 181 Script Analysis (I and II, 3) Analysis of plays from varying perspectives of the actor, director, and designer. Course emphasizes theatre terminology and develops a working vocabulary. (Lec. 3) Staff (A)
- 211, 212 Basic Acting I, II (I and II, 2 each) Introduction to the theory and basic techniques of acting. Includes moment-to-moment improvisation, the reality of doing, fantasy work, and voice and movement. (Studio 4) Pre for 211: 111, 117, or permission of instructor; concurrent enrollment in 213. 212: Continuation of 211. Pre: 211 and permission of instructor; concurrent enrollment in 214. Guest Artist
- 213 Acting Workshop (I, 1) A voice-movement workshop to be taken concurrently with 211. (Studio 2) Pre: concurrent enrollment in 211. **Guest Artist**
- 214 Acting Workshop (II, 1) A voice-movement workshop to be taken concurrently with 212. (Studio 2) Pre: concurrent enrollment in 212. **Guest Artist**
- 217 The Role of Music in Theatre (II, 3) Perspectives on music and its relationship and application to the theatre for theatre students. Musical vocabulary, performance techniques, and conventions related to the theatre, Emphasis on relationship of music and musical performance to all aspects of theatrical production.

- (Studio 6) Pre: permission of instructor. May be repeated for a maximum of 6 credits with permission of instructor. Guest Artist
- 221 Stage Management (1, 3) Theoretical and practical study of the basic methods and procedures of the production staff with emphasis on the director-stage manager relationship and the role of each. Participation in productions required. (Lec. 2, Lab. 2) McGlasson
- 227 Dance for Musical Theatre (1, 3) Orientation and instruction in beginning dance for the musical stage. Dance vocabulary in jazz, ballet, tap; performance techniques and conventions related to the American musical. (Studio 6) Pre: theatre major or permission of instructor. May be repeated once with permission of instructor. McGlasson
- 250 Costume Laboratory (I and II, 3) Practical experience in the principles of costuming including drafting theatrical patterns, construction and finishing techniques, and experience working on a theatrical production. (Lec. 1, Lab. 4) Emery
- 261 Introduction to Theatre Design (1, 3) Introduction to theatre production design with emphasis on development of capabilities for expression in conceptual and graphic terms. Projects in stage scenery, costumes, and lighting. (Lec. 2, Lab. 2) Wittwer
- 291 Production Laboratory (I and II, 1) Orientation and instruction in theatre through tutored participation in crews and production assignments or projects for departmental productions, (Independent Study) May be repeated for credit. Staff
- 300 Individual Problems in Theatre Studies (I and II, 1-3) Individual theatre work on an approved project under supervision of a staff member. (Independent Study) Pre: permission of staff. May be repeated for a maximum of 6 credits. Staff
- 301 Special Group Studies (I and II, 1-3) Group theatre work in approved production projects under supervision of a staff member. (Independent Study) Pre: permission of staff. May be repeated for a maximum of 6 credits. Staff
- 311, 312 Intermediate Acting I, II (I and II, 3 each) 311: Continuation of Basic Acting with emphasis on approaches to characterization through improvisation and through the analysis and performance of assigned scenes. (Studio 6) Pre: 211, 212, and permission of instructor; concurrent enrollment in 313. 312: Continuation of

- 311. (Studio 6) Pre: 311 and permission of instructor; concurrent enrollment in 314. Guest Artist
- 313 Acting Workshop (I, 1) A voice-movement workshop to be taken concurrently with 311. (Studio 2) Pre: concurrent enrollment in 311. **Guest Artist**
- 314 Acting Workshop (II, 1) A voice-movement workshop to be taken concurrently with 312. (Studio 2) Pre: concurrent enrollment in 312. Guest Artist
- 321 Orientation to Play Direction (1, 3) Director's role in the process of theatre production. Emphasis on development of production concepts and rehearsal techniques. (Lec. 2, Lab. 2) Swift
- 322 Play Direction (II, 3) Practical course in play direction. Class functions as a production unit and mounts a season of one-act plays. (Practicum: minimum of 6 hours per week) Pre: 321 and permission of instructor. Swift
- 331 Playwriting (I or II, 3) Analysis and evaluation of written material supplemented by play readings and workshop tryouts of students' plays. (Lec. 2, Lab. 2) Guest Artist
- 341 Theatre Management (II, 3) Principles, terminology, and practical technique of theatre administration. Emphasis on stage management. Assignments will be made to departmental productions. (Lec. 2, Lab. 2) McGlasson
- 350 Makeup (I, 1) Principles and techniques of stage makeup. Practical experience in application through a number of projects in developing character makeups with chiaroscuro, prosthetics, and facial hair. (Studio 2) Emery
- 351, 352 Principles and Theories of Theatrical Costuming I, II (I and II, 3 each) 351: Analytical study of fashions, modes, and manners in Western civilization as required for modern theatrical production; Greek through the Renaissance. (Lec. 3) 352: Continuation of 351; the Renaissance to the present. (Lec. 3) Emery (A)
- 355 Stage Costume Design (II, 3) Costume design theories and techniques for modern and period plays in a wide variety of styles. (Studio 6) Pre: 351 or 352; 261 or permission of instructor. Emery
- 362 Scene Painting (II, 3) Problems in scene painting, including use of color, basic techniques in scenic art such as texturing, trompe I'oeil, work from design elevations, carving, and some work in plastics. (Studio 3) Wittwer

- 365 Scene Design (1, 3) Theories and techniques of scenic design, emphasizing conceptualization and development of stage setting through project designs for various stage forms, production styles, and periods. (Studio 6) Pre: 261 or permission of instructor, Wittwer
- 371 Stage Lighting (I, 3) Theories and techniques of lighting for the stage. A series of design projects introduces students to script analysis and conceptualization for lighting, instrumentation, and the use of color in stage lighting. (Lec. 2, Lab. 2) Wittwer
- 381 History of Theatre to 1642 (I, 3) General history of the theatre from its origins through the Renaissance. Introduction to non-Western drama of the period. Course focuses on the actor, staging, and the audience as they have influenced the development of the theatre and dramatic literature. (Lec. 3) Armstrong (A)
- 382 History of Theatre: Neoclassical Through the Nineteenth Century (II, 3) Course includes non-Western drama of China, Japan, and Korea. Continuation of 381. (Lec. 3) Armstrong (A)
- 383 History of the Modern Theatre (1, 3) Modern theatre and drama from 1880 to the present. Course includes new European stagecraft and its influence on the development of modernist and post-modernist drama, and contemporary non-Western drama. (Lec. 3) Armstrong (A)
- 384 American Theatre History (II, 3) Origins and development of American theatre from the wilderness to the contemporary Broadway and off-Broadway stage, including the evolution of the musical play. Analysis of special contributions made by the grassroots movement, the university theatres, the Federal Theatre Project, and the regional theatre movement. (Lec. 3) Armstrong
- 391 Advanced Production Laboratory (I and II, 1-2) Advanced instruction in theatre through tutored participation in crews and production assignments or projects for departmental productions. (Lab. 2-4) Pre: 291 or permission of staff. May be repeated for credit. Staff
- 400 Advanced Individual Problems in Theatre Studies (1 and II, 1-3) Advanced individual theatre work on an approved project under supervision of a staff member. (Independent Study) Pre: permission of staff. May be repeated for a maximum of 6 credits. Not for graduate credit.

- **401 Advanced Special Group Studies** (*I and II*, 1–3) Advanced group theatre work in approved production projects under supervision of a staff member. (*Independent Study*) *Pre: permission of staff. May be repeated for a maximum of 6 credits. Not for graduate credit.* Staff
- 411, 412 Scene Study (I or II, 3 each) Emphasis on the analysis and interpretation of assigned scenes representative of the major theatrical genres and styles. (Studio 6) Pre: for 411, 311, 312, and permission of instructor and concurrent enrollment in 417; for 412, 411 and permission of instructor and concurrent enrollment in 418. Not for graduate credit. Swift
- 413 Special Workshop in Acting (I or II, 3) Techniques related to a specific aspect or style of performance; e.g., masks, puppetry, versespeaking, and improvisation. The study is normally related to a departmental production or special project. (Studio 4) May be repeated for a maximum of 6 credits. Not for graduate credit. Guest Artist
- 415 Professional Internship (I or II, 12) Designed for junior and first-semester senior theatre majors who desire a professional experience. This program provides instruction and practical experience in cooperation with a faculty advisor and a professional theatre. (Practicum) Pre: permission of chairperson. Not for graduate credit. Staff
- **417 Acting Workshop** (*I*, 1) A voice-movement workshop to be taken concurrently with 411. (Studio 2) Pre: concurrent enrollment in 411. Not for graduate credit. Guest Artist
- **418 Acting Workshop** (*II*, 1) A voice-movement workshop to be taken concurrently with 412. (Studio 2) Pre: concurrent enrollment in 412. Not for graduate credit. Guest Artist
- **420** Advanced Directing Practice (I and II, 1–3) Special projects for the advanced directing student. Student directors will assume production responsibilities for all aspects of their projects, including a critical analysis upon completion. (Independent Study) Pre: 321, 322, or equivalent and permission of instructor. Not for graduate credit. Swift
- 441 Advanced Theatre Management (I and II, 3). Individual projects of theatre management in a major departmental production or project. (Practicum) Pre: 341. Not for graduate credit. McGlasson

- **451 Stage Costume Technology** (*I*, *3*) Construction methods and techniques appropriate to stage costuming with emphasis on major theatrical periods and productions. (Studio 6) Pre: 351 or 352 or permission of instructor. May be repeated for a maximum of 6 credits. Not for graduate credit. Emery
- **455 Advanced Costuming** (1 or II, 1–3) Individual projects in costume design for studio or major productions. Styles and theory related to projects; costume sketches and construction. (Independent Study) Pre: 355 and permission of instructor. Not for graduate credit. Emery
- 463 Special Workshop in Design and Technical Theatre (I and II, 3) Techniques related to a specific aspect or style of production; e.g., masks, puppetry, wig making, sound effects, projections, properties. Normally related to a departmental production or special project. (Lab. 6) May be repeated for a maximum of 6 credits. Not for graduate credit. Staff
- **465 Advanced Scene Design** (1 or II, 1-3) Individual projects in designing scenery for studio and major productions. (Studio 2-6) Pre: 365 and permission of instructor. Not for graduate credit. Wittwer
- **475** Advanced Stage Lighting (*I or II*, 1–3) Individual projects in lighting design and control for studio and major productions. (*Studio 2–6*) *Pre: 371 and permission of instructor. Not for araduate credit.* Wittwer
- **481 Topics in Theatre** (I or II, 3) Selected topics in theatre. (Seminar) Pre: upper-division standing and permission of instructor. May be repeated for credit with different topic. Staff
- **482** Theatre Architecture in Western and Non-Western Drama (I, 3) Examines staging practices of Western and non-Western drama from Egyptian staging of passion plays through the theatre practice of China, Japan, and Korea. (Seminar) Pre: upper-division standing and permission of instructor. In alternate years. Armstrong
- **483** Aesthetics and Criticism of the Theatre (*II*, 3) Study of dramatic theory and criticism. (*Seminar*) *Pre: upper-division standing and permission of instructor. In alternate years*. Armstrong
- **484 Special Research Project** (*I and II*, *3*) An indepth study of a single critical or historical aspect of theatre. The subject is normally related to a departmental production. (*Independent Study*) Pre: permission of instructor. May be repeated for a maximum of 6 credits. Not for graduate credit. Staff

University of Rhode Island Freshman Seminar (URI)

Coordinator: Dean Strommer, University College

101 Traditions and Transformations: A Freshman Seminar (I and II, 1) Introduces first-year students to the traditions of higher education and academic culture and to significant societal and personal issues that bear on developing goals for the undergraduate years. Beginning in spring 1996, required of all new freshmen and new transfer students with less than 24 credits. May not be repeated for credit. Staff

University Year for Action Internship Program (UYA)

Director: Associate Professor Schaffran

- 301, 302 Field Experience I, II (I and II, 3–12 each) Field experience gained at placement site through participation in the UYA program. The experience will be defined by a job description and learning contract arranged by the UYA director between the student intern, the intern's faculty advisor, and the relevant agency supervisor. (Practicum) Pre: junior or senior standing, a minimum quality point average of 2.50, participation in the UYA program, and permission of faculty advisor. May be repeated for a maximum of 24 credits. S/U credit. Staff
- 303, 304 Colloquium I, II (I and II, 3 each)
 Seminar format. Discussions of issues and problems raised by internship experiences in public
 service agencies. (Seminar) Pre: concurrent enrollment in 301 for 303, and in 302 for 304. Required for and open only to students enrolled in
 the UYA program. S/U credit. Staff

Urban Affairs (URB)

Director: Professor Feld

- **210 Introduction to Urban Affairs** (*I*, *3*) Introductory course for students planning to concentrate in the urban affairs program. Investigation of the interdisciplinary approach in analyzing urban issues, potentials, and problems. (*Lec. 3*) Motte, Parella
- **391, 392 Directed Study** (*I and II, 1–3 each*) Independent work in urban affairs for individual students or groups. (*Independent Study*) *Pre:* 210. Staff
- **397 Field Work in Urban Affairs** (*I and II*, 0–12) Field work as arranged. The student works as a part- or full-time worker in an urban affairs

agency, under the supervision of a faculty advisor. (Practicum) Pre: 210 and two common-core courses or equivalent. Staff

498, 499 Urban Affairs Senior Seminar (II, 3 each) The study of a particular urban issue from an interdisciplinary perspective. Required of all urban affairs majors. (Seminar) Pre: 210 or permission of instructor, and junior or senior standing. Not for graduate credit. Motte, Parella

Women's Studies (WMS)

Director: Professor Reilly

- 150 Introduction to Women's Studies (I or II, 3) Images of women in American culture, the theories and processes of socialization, historical perspectives, and implications for social change. (Lec. 3) Staff (S)
- 210 Introduction to Feminist Theories (I or II, 3) Historical development of feminist thought, the exploration of contemporary feminist theories, including African-American, lesbian, Western and non-Western perspectives, and the future role of feminist theories. (Lec. 3) Staff
- 300 Field Experience in Women's Studies (I and II, 3-6) Supervised field work allowing students to learn through direct personal experience about the background, problems, and concerns of particular populations of women. (Practicum) Pre: 150 or 210 or permission of instructor. May be taken or repeated for a maximum of 6 credits. Staff
- 310 Race, Class, and Sexuality in Women's Lives (I or II, 3) Interconnections among race, ethnicity, class, and sexuality and the impact of sexism, racism, classism, and heterosexism on women's lives are investigated. Alliance building among women is explored. (Lec. 3) Pre: 150 or 210 or permission of instructor. Staff
- 330 Feminist Methods (I or II, 3) Distinguishing qualities of feminist methodologies are examined, including methods in the social sciences, humanities, and natural sciences. The interdisciplinary focus of feminist research and the future of feminist methods are considered. (Lec. 3) Pre: 210 or permission of instructor. Staff
- 333 Women in Irish Society (I or II, 3) Roles of Irish women will be examined through historical and contemporary writings. The decline of women's power will be investigated and their current status will be assessed, especially in the Republic. (Lec. 3) Reilly (F) (L)

350 Special Topics in Women's Studies (I and II, 1-3) Selected areas of study pertinent to women's studies. Instruction may be offered in class seminar or tutorial environments according to specific needs and purposes. (Lec.) May be repeated with different topic. Staff

400 Critical Issues and Feminist Scholarship (I or II, 3) Theoretical and value questions in women's studies; impact of feminist scholarship on traditional disciplines; feminist theory and research methods in selected fields; the future of feminism. (Seminar) Pre: 210 or permission of instructor. Staff

450 Independent Study (I and II, 3) Advanced work in women's studies under the direction of a faculty member affiliated with the women's studies program. (Independent Study) Pre: junior or senior standing. May be repeated for a maximum of 6 credits. Staff

Writing (WRT)

Director: Associate Professor Shamoon

- 002 Writing Lab (I and II, 0) Intensive study of grammar, punctuation, sentence formation, and paragraph skills. Operates on individual tutorial basis. Students may be referred. (Lab.) Staff
- 101 Composition (I, II, and SS, 3) Practice in the organization of ideas and language skills. Emphasizes steps in the writing process and responses to readings to develop ability, confidence, and clarity in writing. (Lec. 3) Not open to students who have completed CMS 101. Not for major credit in English. Staff (Cw)
- 103 (or ENG 103) Introduction to Literature (I and II, 3) The experience of literature through reading and discussion of fiction, poetry, and drama. Writing of six to eight essays on literary topics. (Lec. 3) Requires writing skills beyond the elementary level. Staff (Cw)
- 123 College Writing for Returning Students (I and II, 3) College-level readings and discussions as a basis for instruction and practice in specific types of written work required in college courses. (Lec. 3) Offered through the College of Continuing Education. For students who are beginning degree study after an interruption in formal education of at least three years. Not open to students with credit in BGS 100. Staff (Cw)
- 201 Introduction to College Research Writing (I and II, 3) An introduction to strategies of reading and writing academic research in the physical sciences, social sciences, humanities, and the arts. Emphasizes longer papers and research methods. (Lec. 3) Staff (Cw)

- 227 Business Communications (I and II, 3) Basic business communications forms, group reports and presentations, effective use of electronic mail systems, and design of graphic aids for successful visual communication. (Lec. 3) Open to business majors only. Martin and Staff (Cw)
- 235 Writing with Computers (I or II, 3) The study of writing as modified by writing with computer. Practice in a variety of professional papers, graphic enhancement of text, and desktop publishing. (Lec. 3) Staff (Cw)
- 301 Writing Nonfiction (I and II, 3) Study and practice in advanced nonfiction with an emphasis on tone, style, audience, and the range of authorial voices. Writing will be submitted for publication. (Lec. 3) Staff (Cw)
- 333 Scientific and Technical Writing (I and II, 3) Practice in specific forms of writing in the scientific and technical fields. (Lec. 3) Competence in basic skills required. Staff (Cw)
- 435 (or EDC 435) The Teaching of Composition (I and II, 3) Philosophy, materials, and methods underlying the teaching of writing with emphasis on current approaches including the application of linguistics. Offers practice in writing workshop techniques, marking, constructing assignment sequences, and individualized instruction. (Seminar) Pre: junior standing or permission of instructor. Staff
- 488 Traditions of Nonfiction See English 488.
- 512 Modern Rhetorical Theory (1, 3) An introduction to theories of rhetoric and their relation to literature and language. Includes D'Angelo, Kinneavy, Winterowd, Perelman, Booth, and Burke. Pertinent related literary works. (Lec. 3) Pre: graduate standing or permission of instructor. Next offered fall 1995. Staff
- 535 Theories and Strategies in the Teaching of Writing (II, 3) An introductory course in theories and pedagogy of rhetoric. Readings and lectures cover the current research in composition, including such areas as ESL and business or technical communications. (Lec. 3) Pre: graduate standing or permission of instructor. Next offered spring 1996. Staff
- 999 Methods of Teaching College Writing (I and II, 0) Materials and multiple methods of teaching writing on the college level. Required of teaching assistants who will teach in the College Writing Program unless waived by the director of English graduate studies, the supervi-

sor of teaching assistants, and the director of the College Writing Program. (Seminar) Staff

Zoology (ZOO)

Chairperson: Professor Bullock (Biological Sciences)

- 101 Animal Diversity (1, 3) Survey of animal groups with emphasis on invertebrate forms. laboratory dissections, observations, and experiments. Occasional field trips. Lectures stress progressive specialization of structures and their functions, (Lec. 2, Lab. 3) Bullock
- 102 Chordate Anatomy (II, 3) Functional anatomy of chordates, including a consideration of the genesis of principal organ systems. Laboratory consists of detailed, integrated study of selected chordate forms. (Lec. 2, Lab. 3) Staff
- 104 Population and Community Dynamics (II, 3) Principles of population and community dynamics from empirical and mathematical perspectives. Topics include population growth; species interactions; optimal foraging strategy; niche theory; natural selection. Laboratory sessions incorporate use of natural selection, use of computers, problem solving, and population growth in Tribolium and Daphnia, competition and predation. (Lec. 2, Lab. 3) Costantino and Staff
- 111 General Zoology (I and II, 4) Physiology, development, genetics, ecology, and study of types of animals, with emphasis on evolution. Introduction to further studies in zoology for both potential professional and nonprofessional students. (Lec. 3, Lab. 2) Not open to students with credit in BIO 102. Heppner (N)
- 121 Human Anatomy (I and II, 4) Elementary anatomy of the organ systems, studied with the aid of charts, models, and dissection of the cat. (Lec. 3, Lab. 3) Open to physical education, dental hygiene, nursing, pharmacy, pre-physical therapy, and dietetics majors only. Bibb and Shoop
- 141 Introduction to the Biology of Marine Animals (1, 3) Environmental adaptations, physiology, and behavior of marine animals. Description of methods of study of marine animals. (Lec. 2, Rec. 1) Offered in alternate years. Next offered fall 1997. Hill
- 201 General Animal Physiology (1, 3) Basic principles of physiology with emphasis on cellular and membrane mechanisms. Topics include bioenergetics and metabolism, enzymes, respiratory functions of blood cells, osmoregulation. bioelectricity and motility, cellular responses to

- humoral stimuli. (Lec. 2, Lab. 3) Pre: two semesters of biology and one semester of chemistry recommended. Kass-Simon
- 202 Animal Development (II, 3) Descriptions and analyses of developmental changes in animals based on experimentally derived principles. (Lec. 2, Lab. 3) Pre: two semesters of zooloav. Bibb
- 203 Introduction to Evolutionary Genetics (1, 3) The genetic basis of evolutionary change. Topics of the origin, maintenance, and significance of genetic variation. The Darwinian revolution. (Lec. 2, Lab. 3) Pre: two semesters of biological science. Costantino
- 242 Introductory Human Physiology (I and II, 3) Functions of the organ systems of the human body and their coordination in the whole human organism. Attention is given to the needs of students preparing for health-related professions. (Lec. 3) Pre: 111 or 121 or BIO 102. Not for major credit in zoology. Specker and Staff
- 244 Introductory Human Physiology Laboratory (I and II, 1) Mechanisms of physiological processes are illustrated by experiments on vertebrate animals. (Lab. 3) Pre: credit or concurrent enrollment in 242. Not open to students with credit in 442. Specker and Staff
- 262 (or BOT 262) Introductory Ecology (1, 3) Structure and function of ecosystems, limiting factors, population dynamics, population interactions, and community relationships. Selected habitats and general ecological effects of humans. (Lec. 2, Rec. 1) Pre: BIO 101, 102, or BOT 111 and ZOO 111 or equivalent, Harlin, Killingbeck, Shoop, and Staff
- 286 Humans, Insects, and Disease (1, 3) Role of insects, ticks, and mites as vectors and as direct agents of diseases in humans; factors affecting the spread of these diseases and their role in our cultural development. (Lec. 3) Not for major credit in zoology. Hyland (N)
- 301 Physiological Experiments (II, 3) Methods of investigating physiological problems in the laboratory. Topics and techniques will be presented briefly, then employed in an individual laboratory project. (Lab. 6) Pre: any four of 101, 102, 104, 201, 202, 203. Staff
- 327 Vertebrate Histology (1, 3) A study of the normal microscopic organization of the cells and tissues that compose the organ systems of vertebrates. An introduction to histochemical and cytochemical methods is included. (Lec. 3) Pre: one year of biological sciences and one semester of organic chemistry. Staff

- 329 Vertebrate Histology Laboratory (1, 1) A detailed study in the laboratory of prepared microscope slides of cells and tissues of vertebrates. (Lab. 3) Pre: credit or concurrent enrollment in 327. Staff
- 331 Parasitology (II, 3) Structure, life cycles, ecology, and economic relationships of the parasitic protozoa, helminths, and arthropods. Origin and biological significance of parasitism and host-parasite relationships. Encompasses experimental laboratory work on life cycles of selected species and collection and identification of local parasitic forms including those from the marine fauna. (Lec. 2, Lab. 3) Pre: two semesters of biology. Hyland
- 341 Basic Cellular Physiology (II, 3) Cellular processes are examined with respect to chemical composition of cells and media, membranes and organelles, exchange of materials and energy with environment, cellular replication, activities such as movement, conduction. (Lec. 2, Lab. 3) Pre: one semester of chemistry and one semester of either zoology or biology. Staff
- 343 Physiology of Exercise (1, 3) Applied human physiology, with applications to work, health, physical education, and athletic sports. Particular attention to adjustments of the circulatory and respiratory systems during physical activity. Application of latest technology in the field of fitness and health. (Lec. 2, Lab. 3) Pre: 201 or 242. Manfredi
- 352 Genetics See Botany 352.
- 355 Marine Invertebrates of Southern New England (SS, 3) Collection, identification, and preparation of marine invertebrates of southern New England. Emphasis on field work and preparation of specimens for scientific study. (Lab. 6) Pre: 101 or permission of instructor. Bullock
- 381 Introductory Entomology See Entomology 385.
- 382 Introductory Entomology Lab See Entomology 386.
- 391, 392, 393, 394 Directed Work (I and II, 1-3 each) Advanced undergraduate work in anatomy, endocrinology, physiology, histology, embryology, entomology, taxonomy, ecology, marine biology, and related subjects. Individual or group work by prior written arrangement with a staff member and with permission of chairperson. (Independent Study) Staff

- 395 Seminar in Zoology (I and II, 1) Introduction to sources of zoological literature. Presentation of reports of scientific papers by students, with discussion by the class. (Seminar) Pre: junior standing and three courses in zoology. S/U credit. Kass-Simon
- 397, 398 Colloquium in Zoology (1 and 11, 0 each) Introduction to modern scholarly work in zoology. Lectures by visiting and resident scholars, with questions from the audience. Expected of students enrolled in the zoology honors program. (Lec.) Pre: open to biology and zoology majors only. Staff
- 437 Fundamentals of Molecular Biology See Botany 437.
- 441 Environmental Physiology of Animals (1, 3) The dynamics of the interaction of animal functions with the environment. Emphasis on quantitative study of physiological adaptations to environmental fluctuations. (Lec. 3) Pre: 201 or 341. In alternate years. Next offered in 1997. Hill
- 442 Mammalian Physiology (II, 3) Intensive study of the physiological mechanisms that regulate the animal body and its organ systems. Emphasis on knowledge obtained from experimental physiology. Class discussion of applied physiology. (Lec. 2, Rec. 1) Pre: one semester each of anatomy and physiology courses. Recitation section limited to graduate students in the College of Nursing. Hill
- 444 Experimental Physiology (II, 3) Introduction to noninvasive research methods in physiology. Emphasis on experimental design, recording and analyzing data, and use of laboratory notebooks in writing for publication. (Lab. 3) Pre: 201 or three semesters of biological science. Hill
- 445 Endocrinology I (1, 3) Comparative approach to the endocrine regulation of the organism and to the molecular basis for hormone action. (Lec. 3) Pre: BCH 311 or equivalent and ZOO 201 or 242 or equivalent. Specker
- 446 Introduction to Cellular and Behavioral Neurobiology (II, 3) Basic principles of excitable cell function. Emphasis will be on cellular and membrane mechanisms as they relate to behavior. (Lec. 3) Pre: an animal physiology course; one semester of calculus, physics, or biochemistry is strongly recommended or permission of instructor. Next offered spring 1996. Not for graduate credit. Kass-Simon

- 454 Invertebrate Zoology (II, 4) Study of the origin and evolutionary relationship of the invertebrate animals. Emphasis on marine forms. Laboratory sessions include comparative study of selected examples and field trips to local environments. (Lec. 2, Lab. 4) Pre: 101 or BIO 101, 102 or BOT 111 and ZOO 111 or equivalent. Bullock
- 455 (or BOT 455) Marine Ecology (I, 3) Investigation of the structure and dynamics of various marine ecosystems. Includes mineral cycling, energy flow, community and population organization, and behavioral ecology in selected marine environments. (Lec. 3) Pre: 262 or permission of instructors. In alternate years. Next offered 1996-97. Cobb and Harlin
- 457 (or BOT 457) Marine Ecology Laboratory (1, 1) Field and laboratory work on community relationships of dominant organisms in Rhode Island marine environments. (Lab. 3) Pre: concurrent enrollment in 455 and permission of instructors. Limited to 15 students. In alternate years. Next offered 1996-97. Cobb and Harlin
- 460 Advanced Population Biology (II, 3) An extension of the seminal views of Fisher, Wright, Haldane, Volterra, and Lotka on the biology of populations, especially in the areas of genetics, ecology, and demography. (Lec. 3) Pre: MTH 131 and 132 or 141 and 142. Costantino
- 465 Limnology (I, 4) The study of continental waters. Emphasis on ponds and lakes, including uptake kinetics, population biology, and community structure of lacustrine organisms, as well as physical and chemical properties of fresh water. (Lec. 3, Lab. 3) Pre: 104 or 262 and one semester of chemistry. Twombly
- 466 Vertebrate Biology (II, 3) Life histories, adaptations, ecology, classifications, and distribution of vertebrate animals. Laboratory and extensive field work on local vertebrates. (Lec. 2, Lab. 3) Pre: 104 or 262 recommended. Staff
- 467 Animal Behavior (II, 3) Ethology and sociobiology of animals. Topics in the control and development of behavior patterns, orientation in time and space, social behavior, and behavioral ecology. (Lec. 2, Lab. 3) Pre: two semesters of zoology; 104 or 262 recommended. Cobb
- 491, 492 Research in Animal Biology (I, II, or SS, 1-3 each) Undergraduate research in an area of animal biology. Individual or group guided research. A proposal must be approved by a faculty member and the chairperson. (Independent Study) Not for graduate credit. Staff

- 501 Systematic Zoology (1, 3) Species concepts and theories of biological classification, Taxonomic decisions and publication, numerical taxonomy, and review of the rules of zoological nomenclature. (Lec. 3) Pre: ZOO 262 and BOT 352, 254 or 466 recommended. In alternate years. Next offered 1996, Bullock
- 505 Biological Photography (1, 2) Application of scientific photography to biological subjects, living and prepared. Photomacrography, Principles of photography as applied to the specialized needs of biological research and publication. (Lec. 1, Lab. 5) Pre: permission of instructor. Heppner
- 508 Seminar in Zoological Literature (II, 1) Survey of zoological literature including traditional methods of bibliographic control, contemporary information retrieval services, and the development of a personalized information system. (Lec. 1) Pre: graduate standing in zoology. Kelland
- 521 Recent Advances in Cell Biology See Microbiology 521.
- 531 Advanced Parasitology Seminar (II, 2) Advanced topics in the host-parasite relationships of protozoan and metazoan parasites. Reading knowledge of one foreign language assumed. Topics vary from year to year. (Lec. 2) Pre: 331 or equivalent. Hyland
- 541 Comparative Physiology of Marine Animals (1, 3) Companson of physiological mechanisms by which animals maintain life with emphasis on marine invertebrates. Responses to external environment mediated by receptors, nervous systems, effectors. Living control systems for muscular activity and circulation. (Lec. 2, Lab. 3) Pre: 101 and 201. In alternate years. Next offered 1996-97. Hill
- 545 Endocrinology II (1, 3) Molecular basis of hormone action and evolution of regulatory systems. (Lec. 3) Pre: graduate standing and one course in physiology and one course in biochemistry at the college level. In alternate years. Next offered 1997-98. Specker
- 546 Introduction to Neurobiology (II, 2) Fundamental processes in neurobiology with emphasis on cellular and membrane mechanisms of nerve functioning. (Lec. 2) Pre: 201 and MTH 141. In alternate years. Next offered spring 1996. Kass-Simon
- 547 Laboratory in Electrophysiological Techniques (II, 2) introduction to methods of extracellular and intracellular electrophysiology of

excitable tissues. (Lab. 4) Pre: credit or concurrent enrollment in 546. In alternate years. Next offered spring 1996. Kass-Simon

- 549, 550, 551 Advanced Topics in Neurobiology (II, 3 each) Published papers in selected aspects of neurobiology will be discussed. Representative topics include role of Ca++, c-AMP in the nervous system, gating currents learning at the cellular level, cellular rhythmicity. (Seminar) In alternate years. Next offered 1997. Kass-Simon
- **561 Behavioral Ecology** (*I*, *3*) The interaction of animal behavior, ecology, and evolution. Topics include predator-prey relationships, resource partitioning, competition, territoriality, and reproductive behavior. Term project required. (*Lec. 3*) *Pre: a course in animal behavior and a course in ecology. In alternate years. Next offered* 1997–98. Cobb
- 562 Seminar in Behavioral Ecology (1, 1) Special topics in the relationships between animal behavior and ecology, such as social organization of animals, evolution of behavior, competition, and habitat selection. Discussion and presentation of individual reports. (Seminar) S/U only. Cobb
- 563 Ichthyology (1, 3) Fishes of the world. Their structure, evolution, classification, ecology, and physiology. Emphasis on local marine and freshwater fauna. Several field trips. (Lec. 2, Lab. 3) Pre: 102 or 202 and 466. Staff
- 566 Herpetology (II, 3) Biology of recent orders of amphibians and reptiles; emphasis on adaptations and evolution, world faunal relationships past and present, current systematic problems. Selected herpetological material in laboratory, field trips. (Lec. 2, Lab. 3) Pre: 102 or 202 or permission of instructor. Shoop
- 567 Natural Selection (II, 3) Ideas and controversies concerning the action of natural selection. Maintenance of genetic variability, neutral mutation, levels of selection, recombination and sexual reproduction, and rates of evolution. (Lec. 2, Lab. 3) Pre: 262 and BOT 352 or ZOO 104, or permission of instructor. Twombly
- 568 Ornithology (II, 2) Biology of birds with emphasis on the role of birds in biological research. Areas covered include systematics, evolution, physiology, ecology, and behavior. Discussion of current topics in ornithology. (Lec. 2) Pre: 466 or permission of instructor. Heppner
- 570 Field Biology of Fishes (II, 3) Selected field problems in fish biology, including distribution and diversity, habitat segregation, reproduction, and natural movements. Emphasis on freshwa-

ter and diadromous populations. (Lec. 3) Pre: 563 or permission of instructor. Limited to 10 students, with preference given to graduate students and senior zoology majors. In alternate years. Next offered 1996–97. Staff

573 (or BCH 573) Developmental Genetics (*I*, 3) An examination of animal and plant model systems incorporating concepts of cell biology, physiology, molecular biology, and genetics to understand fundamental mechanisms regulating patterns of organismal development. (*Lec.* 3) *Pre: introductory courses in genetics development, biochemistry, or molecular biology preferred.*

579 (or BCH 579 or BOT 579) Advanced Genetics Seminar (*I and II*, 1) Current topics in genetics, including cytological, ecological, molecular, physiological, population, quantitative, and radiation genetics. (*Seminar*) *Pre: BOT 352 and permission of instructor.* Goldsmith and Mottinger

Goldsmith, Bibb, and Chandlee

- **581 General Acarology** (*I*, *3*) Detailed study of mites and ticks, their structure, life histories, and classification. Free–living forms as well as plant and animal feeders. (*Lab. 6*) *Pre: 331 or 586. In alternate years. Next offered 1997–98.* Hyland
- 586 Medical and Veterinary Entomology (II, 3) Life histories, classifications, habits, and control of insects and other arthropods that affect the health of humans and animals. Duties of the entomologist on a public health team, including field practice in methods of insect surveys, control measures, and subsequent surveys to determine success of control measures. (Lec. 1, Lab. 4) Pre: 331 or 381 or equivalent. In alternate years. Next offered 1996–97. Hyland
- **587** Seminar in Neurobiology (I or II, 1) Current literature in the neurosciences will be surveyed. Topics include molecular and behavioral electrophysiology, ultrastructure of excitable cells, receptor and pharmacological neurobiology of invertebrates and vertebrates. (Seminar) Pre: graduate standing or one advanced neuroscience course. Kass-Simon
- 599 Master's Thesis Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- **641, 642, 643, 644, 645 Seminar in Physiology** (*I and II, 1–3 each*) Reports and discussions on topics of current research in physiology. Subject matter adapted to meet interests of staff and students. (*Seminar*) *Pre: permission of instructor.* Staff

- 664 Seminar in Ichthyology (II, 2) Reading, Iibrary research, reports, and class discussion on problems of current research interest in the biology of fishes. (Seminar) Pre: 563 or permission of instructor. In alternate years. Next offered 1995— 96. Staff
- 666 Biology of Metamorphosis (II, 3) The evolutionary, ecological, and physiological regulation of metamorphosis and related life-history events in diverse taxa. (Seminar) Pre: graduate standing and 541 or 545 or 567 or 573. Specker or Twombly
- 668 Biology of Reproduction in Animals (II, 3) Evolution of sexual reproduction, neuroendocrine signals, and behavioral controlling mechanisms in diverse phyla. (Lec. 3) Pre: 545, 561, or 567. Twombly, Specker, and Cobb
- 675 Advanced Ecology Seminars (I and II, 2 each) Specialized and advanced areas of ecological research and theory, including zoogeography, Pleistocene ecology, population dynamics, energy flow in ecosystems, and radiation ecology. (Seminar) Pre: permission of instructor. Staff
- **679** Animal Communication See Oceanography 679.
- 691, 692 Directed Research (I and II, 1–3 each) Subject matter adapted to meet the needs of the student. May be arranged with any staff member. (Independent Study) Pre: permission of chairperson. Staff
- 693, 694 Zoological Problems (I and II, 1–3 each) Special work to meet the needs of individual students who are prepared to undertake special problems. (Independent Study) Pre: permission of chairperson. S/U credit for 694. Staff
- 695 Graduate Seminar in Zoology (I and II, 1) Students to give seminar reports on their thesis research. Attendance and registration required of all graduate students in residence, but only 2 credits my be applied to the program of study. (Seminar) Pre: graduate standing. S/U credit. Staff
- 699 Doctoral Dissertation Research (I and II) Number of credits is determined each semester in consultation with the major professor or program committee. (Independent Study) S/U credit.
- 930 Workshop in Zoology Topics for Teachers (1, 11, or 55, 0–3) Especially designed for secondary school science teachers. Basic topics in zoology from an advanced or pedagogical perspective. (Workshop) Pre: teacher certification. Staff

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- Skogley, C. Richard, Ph.D., Professor of Plant Sciences
- Slader, Carl Vincent, M.Ed., Professor of Health and Physical Education for Men
- Smart, Mollie S., Ph.D., Adjunct Professor of Child Development and Family Relations
- Smart, Russell C., Ph.D., Professor of Child Development and Family Relations
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- Smith, Kathleen F., Ed.D., Associate Professor of Management
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- *Spence, John E., Ph.D., Professor of Electrical Engineering
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 - Stone, Leslie R., M.S., Professor of Physics Stuckey, Irene Hawkins, Ph.D., Professor of Plant Physiology
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- *Vosburgh, William T., Ph.D., Professor of Psychology
- Votta, Ferdinand, Jr., D.Engr., Professor of Chemical Engineering
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- Warren, David, Ph.D., Professor of Political Science Waters, Harold A., Ph.D., Professor of French
- Weeden, Patricia I., M.S., Associate Professor of Textiles, Fashion Merchandising, and Design
- Weeks, Richard R., D.B.A., Dean of the College of Business Administration and Professor of Morketing
- Wheelock, Kimber G., M.A., Professor of Theatre White, Sidney H., Ph.D., Professor of English Will, Robert Ellsworth, M.A., Professor of Speech and Theatre
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- Wilson, Philip Hempstead, Associate Professor of Plant Science
- *Wood, Norris P., Ph.D., Professor of Biochemistry, Microbiology, and Molecular Genetics
- Wood, Porter Shelley, M.A., C.P.A., Professor of Accounting
- Wood, Stephen W., Ph.D., Professor of Political Science
- Worthen, Leonard R., Ph.D., Associate Dean of Pharmacy and Professor of Pharmacognosy
- Yates, Vance J., Ph.D., Professor of Animal and Veterinory Science
- *Young, William, Th.D., Professor of Philosophy Youngken, Heber W., Jr., Ph.D., Provost for Health Science Affairs, Dean of the College of Pharmacy, and Professor of Pharmacognosy Zinn, Donald J., Ph.D., Professor of Zoology

Faculty

*Denotes graduate faculty

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- *Abushanab, Elie, Professor of Medicinal Chemistry and Chemistry, 1979, 1970. B.S., 1960, American University of Beirut; M.S., 1962, Ph.D., 1965, University of Wisconsin.
- *Adams, Jerome F., Associate Professor of Human Development and Family Studies, 1994, 1989. B.A., 1968, M.A., 1970, University of Windsor; Ph.D., 1989, Purdue University.
- *Ageloff, Roy, Associate Professor of Management Science, 1977, 1972. B.S., 1965, University of New York, Buffalo; M.B.A., 1967, University of Connecticut; Ph.D., 1975, University of Massachusetts.
- *Agostinucci, James, Associate Professor of Physical Therapy, 1995, 1992. B.S., 1975, D.Sci., 1988, Boston University.
- Albert, Alexa, Associate Professor of Sociology and Anthropology, 1987, 1982. B.A., Cedar Crest College; M.A., 1971, Lehigh University; Ph.D., 1978, Bryn Mawr College.
- Allen, Anthony J., Associate Professor of Education, 1978, 1969. B.S., 1960, Loyola University; M.Ed., 1967, Ph.D., 1970, Boston College.
- *Alm, Steven R., Associate Professor of Plant Sciences, 1993, 1987. B.S., 1976, M.S., 1979, State University of New York College of Environmental Science and Forestry; Ph.D., 1985, Ohio State University.
- *Amador, lose A., Assistant Professor of Natural Resources Science, 1992. B.S., 1982, M.S., 1986, Ph.D., 1990, Cornell University.
- *Anderson, James L., Professor of Resource Economics, 1994, 1983. B.S., 1976, College of William and Mary; M.S., 1978, University of Arizona; Ph.D., 1983, University of California,
- *Anderson, Joan Gray, Associate Professor of Consumer Studies and Humon Development and Family Studies, 1990, 1984. B.S., 1971, University of Massachusetts; M.S., 1975, Cornell University; Ph.D., 1984, University of California, Davis.
- *Anderson, Judith L., Professor of Communication Studies and Women's Studies, 1982, 1970. B.A., 1962, M.A., 1963, University of Kansas; Ph.D., 1970, Indiana University.
- *Arakelian, Paul G., Professor of English, 1993, 1976. B.A., 1969. California State University. Los Angeles; Ph.D., 1975, Indiana University.
- *Arimoto, Richard, Associate Research Professor of Oceanography, 1992, 1982. B.A., 1974, M.S., 1977, University of Delaware; Ph.D., 1981, University of Connecticut.
- *Armstrong, Charles P., Professor of Management Science and Information Systems, 1981, 1971. B.S., 1961, M.B.A., 1965, University of Illinois: Ph.D., 1973, University of Arizona.
- Armstrong, Gordon S., Associate Professor of Theatre, 1987, 1983. B.A., 1965, University of Victoria; M.A., 1970, Ph.D., 1975, University of California, Berkeley.
- *Aronian, Sona, Professor of Russian and Women's Studies, 1987, 1970. A.B., 1960, Boston University; Ph.D., 1971, Yale University.

- *Atash, Farhad, Associate Professor of Community Planning and Area Development, 1991, 1985. B.S., 1976, M.S., 1978, Tehran University; MRCP, 1981, Kansas State University; Ph.D., 1985, Rutgers—The State University.
- *August, Peter V., Professor of Natural Resources Science, 1995, 1989. B.S., 1974, University of San Diego; M.S., 1976, Texas Tech University; Ph.D., 1981, Boston University.
- *Babson, John R., Associate Professor of Pharmacology and Toxicology and of Biochemistry, 1992, 1988. B.A., 1975, University of Massachusetts; Ph.D., 1980, Oregon State University.
- Baer, Nadine, Associate Professor, Library, 1983, 1947. B.S., 1947, Simmons College.
- Bailey, Richard E., Professor of Communication Studies, 1981, 1967. B.A., 1951, Otterbein College; M.A., 1954, United Theological Seminary; M.A., 1964, Ph.D., 1968, Ohio State University.
- Bancroft, J. Whitney, Assistant Professor of Resource Development Education and Director, Student Development, College of Resource Development, 1973. B.S., 1962, University of New Hampshire; M.S., 1971, Michigan State University; Ph.D., 1985, North Carolina State University.
- Barbour, Marilyn McFarland, Associate Professor of Pharmacy, 1991. Pharm.D., 1982, University of California, San Francisco.
- *Barker, Walter L., Professor of English, 1992, 1966. B.A., 1960, M.A., 1962, University of Rhode Island; Ph.D., 1966, University of Connecticut.
- *Barnett, Harold, Professor of Economics, 1986, 1970. B.A., 1965, Miami University, Ohio; Ph.D., 1973, Massachusetts Institute of Technology.
- Barnett, Judith B., Professor, Library, 1992, 1971. A.B., 1959, Barnard College; M.L.S., 1962, Drexel University.
- *Barnett, Stanley M., Professor of Chemical Engineering, Food Science and Technology, and Pharmaceutics, 1980, 1969. B.A., 1957, Columbia College; B.S., 1958, Columbia University; M.S., 1959, Lehigh University; Ph.D., 1963, University of Pennsylvania.
- Barrett, James A., Assistant Professor, Library, 1991. B.A., 1975, Suffolk University; M.L.S., 1988, University of Rhode Island.
- *Barton, James F., Assistant Professor of Education, 1990. B.S., 1976, University of Vermont; M.A., 1980, Boston University; Ph.D., 1990, Stanford University.
- *Baudet, Gerard M., Associate Professor of Computer Science, 1987. Eng. Deg., 1970, Ecole Polytechnique; Doctorat, 1973, University of Paris VI; Ph.D., 1978, Carnegie Mellon University.
- *Beauregard, Raymond A., Professor of Mathematics, 1982, 1968. A.B., 1964, Providence College; M.S., 1966, Ph.D. 1968, University of New Hampshire.

- *Beauvais, Laura, Associate Professor of Management, 1992, 1984. B.S., 1979, College of Charleston; Ph.D., 1987, University of Tennessee.
- *Beck, Cheryl, Associate Professor of Nursing, 1992. B.S.N., 1970, M.S.N., 1972, Yale University; D.N.Sc., 1982, Boston University; C.N.M., 1972, Yale University (Certified Nurse-Midwife).
- *Beckman, Judy K., Assistant Professor of Accounting, 1992. B.S., 1981, Bentley College; Ph.D., 1991, Texas Tech University; C.P.A.
- *Bender, Michael L., Professor of Oceanography, 1982, 1972. B.S., 1965, Carnegie Institute of Technology; Ph.D., 1970, Columbia University.
- *Berman, Allan, Professor of Psychology, 1976, 1968. B.A., 1962, University of Massachusetts; M.Ed., 1963, Boston University; Ph.D., 1968, Louisiana State University.
- *Bibb, Harold D., *Professor of Zoology, 1995, 1978.*B.A., 1962, Knox College; M.S., 1964, Ph.D., 1969, University of Iowa.
- *Bide, Martin J., Associate Professor of Textiles, Fashion Merchandising, and Design, 1991. B.Tech., 1974, Ph.D., 1979, University of Bradford, United Kingdom.
- *Biller, Henry B., Professor of Psychology, 1975, 1970. A.B., 1962, Brown University; Ph.D., 1967, Duke University.
- *Blanpied, Peter R., Associate Professor of Physical Therapy, 1995, 1989. B.S., 1979, Ithica College; M.S., 1982, University of North Carolina; Ph.D., 1989, University of Iowa.
- Blood, Linda L., Assistant Professor of Human Development and Family Studies, 1968, 1965. B.S., 1962, University of Maine; M.S., 1965, Oklahoma State University.
- Bodah, Matthew M., Coordinator of Research, Labor Research Center, and Instructor of Labor and Industrial Relations, 1992. B.A., 1985, Providence College; M.S., 1988, University of Rhode Island.
- *Bonner, Jill C., Professor of Physics, 1981, 1976. B.S., 1959, Ph.D., 1968, D.Sc., 1984, King's College, University of London.
- *Boothroyd, Geoffrey, Professor of Industrial and Manufacturing Engineering, 1985. B.S., 1957, Ph.D., 1962, D.Sc., 1974, University of London.
- *Boothroyd, Jon C., *Professor of Geology, 1986,* 1975. B.A., 1962, University of New Hampshire; M.S., 1972, University of Massachusetts; Ph.D., 1974, University of South Carolina.
- *Bose, Arijit, Professor of Chemical Engineering, 1992, 1982. B.Tech., 1976, Indian Institute of Technology; Ph.D., 1981, University of Rochester.
- *Boudreaux-Bartels, Gloria F., Professor of Electrical Engineering, 1993, 1983. B.S., 1974, University of Southwestern Louisiana; M.S., 1980, Ph.D., 1983, Rice University.

- *Boulmetis, John, Associate Professor of Education, 1991, 1977. B.A., 1971, M.A., 1973, University of Rhode Island; Ph.D., 1982, Ohio State University.
- *Boyle, Edmund J., Associate Professor of Accounting, 1994, 1988. B.S., 1976, Boston College; M.B.A., 1979, Northeastern University; Ph.D., 1990, Pennsylvania State University; C.P.A. (New York).
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 - Mello, David, Adjunct Clinical Assistant Professor of Clinical Laboratory Science, 1983. M.S., 1978, Southeastern Massachusetts University.
 - Mello, Paul M., Adjunct Assistant Professor of Physics, 1985. M.A., 1980, University of Rhode Island.
- Menard, Robert F., Adjunct Instructor of Pharmacy Practice, 1983. B.S., 1964, Boston College.
- Messier, Richard H., Adjunct Associate Professor of Mechanical Engineering and Applied Mechanics, 1977. Ph.D., 1975, Brown University.
- Middleton, David, Adjunct Professor of Electrical Engineering, 1966. Ph.D., 1947, Harvard University.
- Miga, Regina F., Adjunct Instructor of English, 1994. B.A., 1970, University of Rhode Island.
- Mikolich, Dennis, Adjunct Clinical Associate Professor of Pharmacy Practice, 1995. M.D., 1980, Universidad Nordestana.
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- *Miller, Donald C., Adjunct Professor of Zoology, 1975. Ph.D., 1965, Duke University.
- Miller, Peter, Adjunct Assistant Professor of Nursing, 1985. M.S., 1978, Boston University.
- Miner, Jeffrey T., Adjunct Instructor of English, 1991. M.A.T., 1977, Rhode Island College.
- Mioni, Jacques, Adjunct Associate Professor of Gerontology, 1983. M.D., 1940, Faculty of Medicine of Paris, France.
- Misra, Prasanta K., Adjunct Professor of Physics, 1988. Ph.D., 1967, Tufts University.
- *Mitchell, Roger E., Adjunct Associate Professor of Psychology, 1989. Ph.D., 1980, University of Maryland.
- Mogawer, Walaa S., Adjunct Assistant Professor of Civil and Environmental Engineering, 1991. Ph.D., 1989, University of Rhode Island.
- Mohanty, Gail F., Adjunct Assistant Professor of Textiles, Fashion Merchandising, and Design, 1995. Ph.D., 1984, University of Pennsylvania.
- Molloy, Patricia, Adjunct Assistant Professor of Nursing, 1992. M.S., 1978, University of Rhode Island.
- Molyneaux, Ronald Dale, Adjunct Instructor of Nursing, 1995. M.S., 1982, Illinois State University.
- Monkhouse, Donald C., Adjunct Professor of Pharmaceutics, 1992. Ph.D., 1970, University of Iowa.
- *Monti, Peter, Adjunct Associate Professor of Psychology, 1977. Ph.D., 1974, University of Rhode Island.
- Moore, Anthony, Adjunct Clinical Instructor of Clinical Laboratory Science, 1980. B.S., 1980, University of Rhode Island.
- Most, Albert Ś., Adjunct Professor of Electrical Engineering, 1974. M.D., 1962, Johns Hopkins University.

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- Mullaney, Joan K., Adjunct Instructor of Nursing, 1985. M.S., 1979, University of Rhode Island.
- Mullin, Cynthia K., Adjunct Instructor of English, 1991. M.A.T., 1970, Rhode Island College.
- Mulvey, Trudy C., Adjunct Instructor of Nursing, 1994. M.S.N., 1991, Yale University School of Nursing.
- *Naar, David F., Adjunct Professor of Oceanography, 1992. Ph.D., 1990, Scripps Institution, University of California, San Diego.
- *Nagata, Ryoichi, Adjunct Associate Professor of Pharmacology and Toxicology, 1995. Ph.D., 1991, Kagoshima University.
- Nanni, Linda, Adjunct Instructor of Nursing, 1991. M.S., 1983, Georgetown University.
- Naylor, Dean, Adjunct Clinical Instructor of Clinical Laboratory Science, 1993. B.S., 1980, University of Rhode Island.
- Nelson, Catherine B., Adjunct Instructor of English, 1994. M.A., 1970, Providence College.
- Nelson, James H., Adjunct Assistant Professor of Physics, 1985. M.S., 1968, Clarkson College of Technology.
- Nightingale, James, Adjunct Clinical Assistant Professor of Pharmacy Practice, 1995. Pharm.D., 1984, University of Utah.
- *Noone, Kevin J., Adjunct Professor of Oceanography, 1993. Ph.D., 1987, University of Washington.
- O'Connell, Patricia, Adjunct Instructor of Nursing, 1992. M.S., 1987, Boston College.
- Oliveira, George, Adjunct Assistant Professor of Pharmacy Practice, 1994. B.S., 1975, University of Rhode Island.
- Oliver, Ernest J.; R.Ph., Adjunct Instructor of Pharmacy Practice and Coordinator of Pharmacy Experiential Programs, 1990. M.B.A., 1985, Bryant College.
- Olsen, Stephen, Adjunct Associate Professor of Natural Resources Science, 1987. M.S., 1970, University of Rhode Island.
- Olson, David G., Adjunct Associate Professor of Industrial Engineering, 1980. Ph.D., 1971, Northwestern University.
- *Omar, Mostafa M.M., Adjunct Assistant Professor of Pharmacognosy and Environmental Health Sciences, 1985. Ph.D., 1982, University of Rhode Island.
- *Opal, Steven M., Adjunct Associate Professor of Clinical Laboratory Science, 1988. M.D., 1976, Albany Medical College of Union University.
- Ortiz, Carlos R., Adjunct Instructor of Pharmacy Practice, 1990. B.S., 1966, Wayne State University.
- Osborne, Elaine M., Adjunct Assistant Professor of Nursing, 1985. M.S., 1977, Boston College.
- Osgood, Charles F., Adjunct Professor of Mathematics, 1980. Ph.D., 1964, University of California, Berkeley.
- Owen, Patricia M., Adjunct Instructor of Nursing, 1991. M.S., 1980, Boston University.

- Oxley, Jimmie Carol, Adjunct Professor of Chemistry, 1995. Ph.D., 1983, University of British Columbia.
- Pallonen, Unto E., Adjunct Associate Professor of Psychology, 1992. Ph.D., 1986, University of Minnesota.
- Palmer, Judy A., Adjunct Instructor of Nursing, 1988. M.S.N., 1982, Boston College.
- Palyszek, Christine V., Adjunct Assistant Professor of Nursing, 1995. M.S., 1982, The Catholic University of America.
- Panciera, Toni M., Adjunct Assistant Professor of Nursing, 1986, and Adjunct Assistant Professor of Pharmacy Practice, 1993. M.S., 1981, University of Rhode Island.
- *Parella, Mary A., Adjunct Assistant Professor of Community Planning, 1992. M.C.P., 1989, University of Rhode Island.
- *Patton, Alexander |., Adjunct Professor of Mechanical Engineering and Applied Mechanics, 1989. Ph.D., 1972, University of Rhode Island.
- Paxson, MaryAnn Araujo, Adjunct Assistant Professor of Psychology, 1991. Ph.D., 1988, University of Rhode Island.
- *Payne, Kenneth F., Adjunct Associate Professor of Community Planning and Urban Affairs, 1995. M.C.P., 1973, University of Rhode Island.
- *Pechenik, Jan A., Adjunct Associate Professor of Fisheries, Animal and Veterinary Science, 1991. Ph.D., 1978, University of Rhode Island.
- Pedro, Henrique T., R.Ph., Adjunct Instructor of Pharmacy Practice and Coordinator of Ambulatory Care Programs, 1990. B.S., 1977, University of Rhode Island.
- *Pell, Claiborne D., Adjunct Professor of Marine Affairs, 1982. M.A., 1946, Columbia University.
- Pereira, Gary L., Adjunct Clinical Instructor of Clinical Laboratory Science, 1993. B.S., 1976, Southeastern Massachusetts University.
- *Pesch, Gerald G., Adjunct Professor of Oceanography, 1992. Ph.D., 1972, University of Rhode Island.
- *Phelps, Donald K., Adjunct Professor of Oceanography, 1969. Ph.D., 1964, University of Rhode Island.
- Phillips, Kathleen M., Adjunct Instructor of Nursing, 1993. M.S., 1987, University of Rhode Island.
- Piemonte, Michael, Adjunct Professor of Management, 1994. M.B.A., 1953, University of Oklahoma.
- Pires, Abilio, R.Ph., Adjunct Assistant Professor of Pharmacy Practice, 1992. B.S., 1976, University of Rhode Island.
- Poisson, Donald, Adjunct Assistant Clinical Professor of Pharmacy Practice, 1995. M.S., 1991, University of Rhode Island.
- Pomfret, Denise Duplessis, Adjunct Instructor of Nursing, 1994. M.S., 1986, University of Rhode Island.
- Pothier, Neil, Adjunct Assistant Prafessor of Chemistry, 1994. Ph.D., 1993, University of Rhode Island.

- Powell, Holly, Adjunct Assistant Professor of Nursing, 1986. M.S., 1978, Medical College of Georgia.
- Powell, Kenneth A., R.Ph., Adjunct Instructor of Pharmacy Proctice, 1990. B.S., 1972, University of Rhode Island.
- *Profughi, Victor L., Adjunct Professor of Political Science, 1991. Ph.D., 1967, University of Pittsburah.
- *Pruell, Richard J., Adjunct Professor of Oceanography, 1990. Ph.D., 1984, University of Rhode Island.
- Radka, Linda H., Adjunct Instructor of Nursing, 1992. M.N., 1984, University of Washington.
- Ramsey, Diane, Adjunct Instructor of Library and Information Studies, 1992. M.L.S., 1978, Simmons College.
- *Ravenscroft, Robert A., Jr., Adjunct Assistant Professor of Computer Science, 1994. Ph.D., 1991, Brown University.
- Raymond, Patricia M., Adjunct Assistant Professor of Gerontology, 1982, and Adjunct Assistant Professor of Psychology, 1986. Ph.D., 1981, University of Rhode Island.
- *Redding, Colleen, Adjunct Assistant Professor of Psychology, 1995. Ph.D., 1993, University of Rhode Island.
- Regan, Lynn F., Adjunct Instructor of English, 1994. B.A., 1968, University of Rhode Island.
- *Reynolds, Charles C., Adjunct Professor of Industrial Engineering, 1982. Ph.D., 1963, Massachusetts Institute of Technology.
- Rhodes, Jean M.R., Adjunct Assistant Professor of Nursing, 1995. Ph.D., 1990, University of South Carolina.
- Rich, Beverly Waldman, Adjunct Instructor of Nursing, 1993. M.S., 1988, Boston University.
- Richards, Paul J., Adjunct Professor of English, 1995. M.A., 1994, Providence College.
- Richardson, Roger, Adjunct Associate Professor of Psychology, 1979. Ph.D., 1967, Louisiana State University.
- Riggs, Suzanne G., Adjunct Assistant Professor of Nursing, 1987. M.D., 1972, Harvard University.
- Rippey, Scott R., Adjunct Assistant Professor of Microbiology, 1984. Ph.D., 1979, University of Rhode Island.
- Roberti, Ann Marie, Adjunct Clinical Assistant Professor of Clinical Laboratory Science, 1986. M.S., 1980, Southeastern Massachusetts University.
- *Roberts, Eric M., Adjunct Assistant Professor of Botany and Plant Sciences, 1991. Ph.D., 1991, University of Texas, Austin.
- Rodd, Noreen, Adjunct Instructor of Library and Information Studies, 1992. Ph.D., 1977, University of Pittsburgh.
- Rodman, Clarke A., Adjunct Research Professor of Mechanical Engineering and Applied Mechanics, 1991. A.B., 1946, Harvard University.

- Rogers, Beverly B., Adjunct Assistant Prafessor of Microbiology, 1990. M.D., 1982, University of Texas, Austin.
- *Rogers, Caroline S., Adjunct Prafessor of Oceanography, 1994. Ph.D., 1977, University of Florida.
- *Roman, Charles T., Adjunct Professor of Oceanography, 1990. Ph.D., 1981, University of Delaware.
- Ronesi, Lynne M., Adjunct Instructor of English and Acting Director of the English Language Fellows Project, 1994. M.S., 1987, State University of New York, Buffalo.
- Rosenzweig, Susan, Adjunct Instructor of Library and Information Studies, 1991. M.L.S., 1975, Drexel University.
- Ross, Richard, Adjunct Instructor of Library and Information Studies, 1990. Ph.D., 1991, Boston College.
- Ross, William, Adjunct Instructor of Library and Information Studies, 1991. M.L.S., 1980, University of Maryland.
- *Rossi, Joseph S., Adjunct Professor of Psychology, 1995. Ph.D., 1984, University of Rhode Island.
- Roy, Louis G., Adjunct Instructor of Pharmacy Administration, 1983. M.S., 1968, University of Rhode Island.
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- Rubin, Alvin F., Adjunct Assistant Professor of Gerontology, 1980. M.S., 1958, Yeshiva University.
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- Rumowicz, Edmund S., Adjunct Associate Professor of Textiles, Fashion Merchandising, and Design, 1987. B.S., 1957, University of Rhode Island.
- Rush, James D., Adjunct Associate Professor of Chemistry, 1992. Ph.D., 1983, University of Rhode Island.
- Russell, Patricia A., Adjunct Instructor of Pharmacy Practice, 1990. B.S., 1983, University of Rhode Island.
- Ryan, Thomas M., Adjunct Instructor of Pharmacy Practice, 1990. B.S., 1975, University of Rhode Island.
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- Schock, Steven G., Adjunct Assistant Professor of Ocean Engineering, 1990. Ph.D., 1989, University of Rhode Island.
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- Seifer, Ronald, Adjunct Assistant Professor of Psychology, 1990. Ph.D., 1981, University of Rochester.
- *Seifert, Gerald, Adjunct Professor of Marine Affairs, 1982. J.D., 1964, Indiana University.
- Serabian, Beverly, Adjunct Assistant Professor of Gerontology, 1983. Ph.D., 1981, California School of Professional Psychology.
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- Sesin, Paul, Adjunct Associate Professor of Pharmacy Practice, 1993. Pharm.D., 1975, Duquesne University.
- *Seymour, Charles, Adjunct Associate Professor of Clinical Laboratory Science, 1988. Ph.D., 1975, Cornell University.
- Shah, Navnit, Adjunct Associate Professor of Pharmaceutics, 1993. Ph.D., 1981, St. John's University.
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- *Shaw, Robert B., Adjunct Associate Professor of Community Planning and Area Development, 1982, and Adjunct Associate Professor of Civil and Environmental Engineering, 1985. M.S., 1966, Purdue University.
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- Sherman, Kenneth, Adjunct Professor of Oceanography, 1977. D.Sc., 1978, Marski Instytut Rybacki, Gdynia, Poland.
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- Smith, James Lewis, Adjunct Professor of Chemistry, 1995. Ph.D., 1979, University of British Columbia.
- Smith, Richard D., Adjunct Assistant Professor of Nursing, 1991. M.D., 1971, Georgetown University School of Medicine.
- *Smith, Tim D., Adjunct Professor of Oceanography, 1991. Ph.D., 1973, University of Washington, Seattle.
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- *Sorensen, Jens C., Adjunct Associate Professor of Marine Affairs, 1985. Ph.D., 1978, University of California, Berkeley.
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- Spierto, Richard J., Adjunct Assistant Professor of Pharmacy Practice, 1995. Pharm.D., 1992, University of Rhode Island.
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- Stolze, Joachim, Adjunct Assistant Professor of Physics, 1992. Ph.D., 1982, University of Dortmund, Germany.
- *Stottmeier, Kurt D., Adjunct Professor of Clinical Laboratory Science, 1988. Ph.D., 1962, Universities of Hanover and Berlin, Germany.
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- Stulik, Anne A., Adjunct Instructor of Nursing, 1992. M.S.N., 1985, State University of New York, Buffalo.
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- Svengalis, Kendall, Adjunct Instructor of Library and Information Studies, 1987. M.L.S., 1975, University of Rhode Island.
- Sweeney, Muriel, Adjunct Instructor of English, 1991. M.A., 1972, University of Rhode Island.
- Sylvia, J. Gerin, Adjunct Special Lecturer in Industrial Engineering, 1980. M.Ed., 1969, Northeastern University.
- Tarlov, Elizabeth C., Adjunct Instructor of Nursing, 1989. M.S., 1983, Pace University, Lienhard School of Nursing.
- *Taylor, Suzanne, Adjunct Professor of Labor and Industrial Relations, 1987, Ph.D., 1970, University of Connecticut.
- *Taylorson, Raymond B., Adjunct Professor of Plant Sciences, 1990. Ph.D., 1960, University of Wisconsin, Madison.
- Tebbetts, Diane, Adjunct Assistant Professor of Library and Information Studies, 1985. D.A., 1985, Simmons College.
- Tefft, Brian C., Adjunct Instructor in Natural Resources Science, 1995. M.S., 1981, University of Maryland/Frostberg State University.

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- *Thomas, Carol J., Adjunct Professor of Community Planning and Area Development, 1971. M.S., 1948, University of Connecticut.
- Thompson, Kenneth P., Adjunct Instructor of Journalism, 1990. B.A., 1989, University of Rhode Island.
- Thompson, William, Adjunct Instructor of Library and Information Studies, 1992. M.S.L.S., 1964, Louisiana State University.
- Thorn, Deborah B., Adjunct Instructor of Pharmacy, 1987. B.S., 1979, University of Rhode Island.
- *Thursby, Glen D., Adjunct Associate Professor of Botony, 1987. Ph.D., 1983, University of Rhode Island.
- Tierney, Timothy, Adjunct Assistant Professor of Education, 1981. M.A., 1976, University of Rhode Island.
- *Tigan, Mark, Adjunct Assistant Professor of Community Planning and Urban Affairs, 1995. M.P.A., 1972, San Jose State University.
- Titlebaum, Edward L., Adjunct Professor of Electrical Engineering, 1992. Ph.D., 1965, Cornell University.
- Tobias, Jerry V., Adjunct Professor of Communicative Disorders, 1985. Ph.D., 1950, Western Reserve University.
- Traines, Mark L., Adjunct Assistant Professor of Nursing, 1989. M.D., 1981, Baylor University.
- Trevino, Belzahet, Adjunct Assistant Professor of Chemical Engineering, 1994. Ph.D., 1993, University of Rhode Island.
- Tryon, Julia, Adjunct Instructor of Library and Information Studies, 1994. M.L.I.S., 1987, University of Rhode Island.
- *Tucker, Wayne, Adjunct Assistant Professor of Mechanical Engineering and Applied Mechanics, 1991. Ph.D., 1987, University of Rhode
- Turnbaugh, Sarah R. Peabody, Adjunct Assistant Professor of Sociology and Anthropology, 1985. M.S., 1977, University of Rhode Island.
- *Turner, Jefferson T., Adjunct Professor of Oceanography, 1994. Ph.D., 1977, Texas A & M University.
- *Turner, Ruth D., Adjunct Professor of Zoology, 1986. Ph.D., 1954, Radcliffe College, Harvard University.
- *Uhlman, James S., Adjunct Associate Professor of Ocean Engineering, 1993. Ph.D., 1983, Massachusetts Institute of Technology.
- Umrigar, Cyrus J., Adjunct Associate Professor of Physics, 1992. Ph.D., 1980, Northwestern University.
- Uustall, Diann B., Adjunct Assistant Professor of Nursing, 1986. Ed.D., 1983, University of Massachusetts.
- Veri, Albert R., Adjunct Associate Professor of Community Planning and Area Development, 1984. M.L.A., 1969, Harvard University.

- Vocino, Michael C., Jr., Adjunct Professor of Library and Information Studies and Political Science, 1992. M.A., 1981, University of Rhode Island.
- Vouros, Paul, Adjunct Professor of Biochemistry and Biophysics, 1988. Ph.D., 1965, Massachusetts Institute of Technology.
- Wachtel, Tom J., Adjunct Associate Professor of Nursing, 1989. M.D., 1973, Faculte de Medecine de Strasbourg, France.
- Wagner, Richard L., Adjunct Professor of Pharmacy Practice, 1985. M.D., 1975, Yale Medical School.
- *Wallace, Mark C., Adjunct Assistant Professor of Natural Resources Science, 1993. Ph.D., 1991, University of Arizona.
- Walsh, Joanna M., Adjunct Instructor of Library and Information Studies, 1990. M.L.S., 1972, Simmons College; M.A., 1977, Northeastern University.
- Wang, Richard Y., Adjunct Assistant Professor of Pharmacy Practice, 1995. O.D., 1986, New York College of Osteopathic Medicine.
- Waters, William J., Adjunct Assistant Professor of Nursing, 1985. Ph.D., 1974, Ohio State University.
- Watkins, William D., Adjunct Professor of Microbiology, 1987. Ph.D., 1979, University of Rhode Island.
- Weinberg, Henry, Adjunct Associate Professor of Mathematics, 1983. Ph.D., 1974, New York University.
- Weinstein-Farson, Laurie L., Adjunct Assistant Professor of Sociology and Anthropology, 1988. Ph.D., 1983, Southern Methodist University.
- Welch, Dennis W., R.Ph., Adjunct Assistant Professor of Pharmacy Practice, 1992. B.S., 1971, University of Rhode Island.
- Welch, Frankie, Adjunct Associate Professor of Textiles, Fashion Merchandising, and Design, 1987. B.A., 1948, Furman University.
- Welsh, Oliver L., Adjunct Professor of Communicative Disorders, 1979. Ed.D., 1964, Boston University.
- *Westcott, David, Adjunct Associate Professor of Community Planning and Area Development, 1995. M.C.P., 1979, University of Rhode
- Weygand, Robert A., Adjunct Assistant Professor of Landscape Architecture, 1989. B.F.A., 1971, B.S.C.E., 1976, University of Rhode Island.
- Weyhing, Mary, Adjunct Assistant Professor of Psychology, 1985. Ph.D., 1983, University of Rhode Island.
- Whelen-Knapp, Christine M., Adjunct Instructor of Nursing, 1991. M.S., 1975, Boston University.
- Whitaker, Martha C., Adjunct Instructor of English, 1995. PM.A.T., 1975, Rhode Island College.
- White, Harvey J., Adjunct Assistant Professor of Electrical Engineering, 1987. M.D., 1978, Wayne State University.
- White, William T., Adjunct Assistant Professor of Nursing, 1993. M.S., 1983, University of Rhode Island.

- Wiberg, Donna, Adjunct Assistant Professor of Nursing, 1988, and Pharmacy Practice, 1993. M.S.N., 1980, University of Rhode Island.
- Wild, Eugenia, Adjunct Assistant Professor of Women's Studies, 1990. M.A., 1983, University of Rhode Island.
- Wilk, Jacqueline B., Adjunct Assistant Professor of Psychology, 1988. Ph.D., 1983, University of Rhode Island.
- *Williams, David O., Adjunct Assistant Professor of Biomedical Engineering, 1977. M.D., 1969, Hahnemann Medical College.
- Williams, Gloria K., Adjunct Assistant Professor of Clinical Laboratory Science, 1988. M.S., 1979, Southeastern Massachusetts University.
- Wine, Howard A., Adjunct Clinical Instructor of Phormacy, 1995. B.S., 1981, University of Rhode Island.
- *Winsor, David S., Adjunct Assistant Professor of Community Planning and Area Development, 1985. M.C.P., 1980, University of Rhode Island.
- Winthrop, Elizabeth F., Adjunct Associate Professor of Food Science and Nutrition, 1994. M.S., 1983, Tufts University.
- Wolinski, Mary E., Adjunct Assistant Professor of Music, 1992. Ph.D., 1988, Brandeis University.
- *Wood, David H., Adjunct Associate Professor of Mathematics, 1988. Ph.D., 1972, University of Rhode Island.
- Woodruff, Charles W., Adjunct Professor of Pharmaceutics, 1986. Ph.D., 1970, Purdue University.
- *Wright, Thomas E., Adjunct Professor of Civil and Environmental Engineering, 1983. M.S.E., 1975, West Virginia University.
- Wriston, Sara, Adjunct Instructor of Nursing, 1993. M.S., 1980, University of Pennsylvania.
- Wyman, Cynthia M., Adjunct Assistant Professor of Pharmacy Practice, 1992. M.B.A., 1986, Bryant College.
- Yankee, Ronald, Adjunct Professor of Clinical Laboratory Science, 1995. M.D., 1960, Yale Medical School.
- Young, Michael A., Adjunct Associate Professor of Psychology, 1985. Ph.D., 1974, Adelphi University, Institute of Advanced Psychological Studies.
- Zartler, Ann S., Adjunct Assistant Professor of Psychology, 1986. Ph.D., 1978, University of Rhode Island.
- Zinner, Steven H., Adjunct Professor of Pharmacy Practice, 1990. M.D., 1965, University of Pennsylvania.

Clinical Appointments

- *Denotes graduate faculty
- Allen, Stephen W., Clinical Instructor in Dental Hygiene, 1989. D.D.S., 1980, Ohio State University College of Dentistry.

- Aschaffenburg, Peter H., Clinical Instructor in Dental Hygiene, 1984. D.M.D., 1981, Harvard School of Dental Medicine.
- Barry, Thomas F., Clinical Instructor in Dentol Hygiene, 1989. D.D.S., 1951, University of Maryland School of Dentistry.
- Beauregard, Barbara J., Clinical Instructor in Dental Hygiene, 1995. A.S. in Dental Hygiene, 1973, University of Rhode Island.
- Bhattacharya, Lalita, Clinical Instructor in Dental Hygiene, 1985. D.M.D., 1984, University of Pennsylvania.
- Brown, Diana V., Clinical Instructor in Dental Hygiene, 1986. A.S. in Dental Hygiene, 1963, University of Rhode Island; B.A., 1987, Roger Williams University; M.A., 1992, University of Rhode Island.
- Calitri, Paul F., Clinical Instructor in Dental Hygiene, 1993. D.M.D., 1991, Tufts University School of Dental Medicine.
- Carlotti, Albert E., Jr., Clinical Instrucor in Dental Hygiene, 1977. D.D.S., 1964, Baltimore College of Dental Surgery; Certificate in Oral and Maxillofacial Surgery, 1968, University of Maryland Dental and Medical Schools.
- Chapman, Kristine Bishop, Clinical Instructor in Dentol Hygiene, 1989. B.S., 1979, University of Rhode Island.
- Congdon, Karen S., R.N., E.M.T., Clinical Coordinator in Cordiac Rehabilitation, 1986. B.S., 1973, M.S., 1986, University of Rhode Island.
- Connors, Elizabeth C., Clinical Coordinator of the Speech and Hearing Clinic, 1986. M.A., 1981, Northern Michigan University.
- English, Ray, Jr., Clinical Instructor in Dental Hygiene, 1986. D.M.D., 1983, Boston University School of Graduate Dentistry.
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APPENDIX

Loan Funds and Scholarships

The following are privately contributed loan and scholarship funds. For federal programs and general student aid information, see pages 20–23.

LOAN FUNDS

Short-term loans of up to \$200 are available to full-time students who can demonstrate a means of repayment. These are interest-free loans that may be used only for education-related expenses and must be repaid within 90 days.

Short-term loan funds have been contributed by private donors. In addition to an unrestricted fund for undergraduates, loans are available to graduate and international students.

Included among the many donors to the Short Term Loan Fund are: Leroy F. Burroughs, Dean Mason Campbell Memorial, Norman M. Fain, Barney M. Goldberg, Patrons Association, Providence Engineering Society, Providence Wholesale Drug Company, University of Rhode Island Alumni Association, John H. Washburn Memorial, and Louisa White Fund. A separate short-term loan fund has been established in the name of Peter M. Galanti.

Also, individual loan funds have been established in the name of Dr. J. Louis Jack in memory of his brother, Dr. Gabriel F. Jack, and his wife, Gladys E. Jack. These funds are available to any qualified URI students with financial need and good scholastic standing. Interest rate is one-half of prevailing rate.

Applications for short-term loans are available at the Student Financial Aid Office.

SCHOLARSHIPS

★ Denotes scholarships available to graduate students

If not otherwise stated in the following descriptions, selection of recipient is made by the Student Financial Aid Office.

Any College of the University

George and Violet Ajootian Endowed Scholarship: Income from endowment awarded annually to students with financial need.

American Screw Company Foundation: Income from endowment awarded to students having financial need, with preference to children of former employees of the American Screw Company.

Anthony Athletic Association Scholarship: \$200 awarded annually to a graduate of Coventry High School with financial need.

George E. Arnold '30 Memorial Scholarship: Income from endowment for scholarships awarded annually on the basis of financial need.

Aurora Civic Association Scholarship: Income from endowment to support the University's general scholarship fund.

B.A. Ballou Company Scholarship: Scholarship awarded annually to students with financial need.

* John F. Bannon Endowed Scholarship: Earned income from endowment to be awarded to undergraduate or graduate students on the basis of financial need.

Carlton and Olive Barton Scholarship: Annual income from the fund will be awarded to an undergraduate student with an above-average academic record and genuine financial need.

John M. Baxter Endowed Scholarship: Income from endowment for a scholarship in basketball or track awarded annually to a student competing in one of these sports. Recipient selected by the Director of Athletics in consultation with basketball and track coaches. The funds were donated by the late John M. Baxter '52; Sun Life Assurance Company of Canada; and numerous others.

Ralph S. Belmont, M.D., '31'Endowed Scholarship: Income from endowment available to undergraduate students with financial need. First consideration given to graduates of Rogers High School, Newport, R.I.

Artacky and Elese Berberian Endowed Scholarship: Income from endowment awarded annually to a student with financial need.

Hank Blay Memorial Scholarship Endowment: Income from endowment awarded annually to a student employed by, or whose parent is employed by, the Metropolitan Life Insurance Company, on the basis of academic performance and financial need.

Alice Bliss Memorial Scholarship: Income from endowment awarded to students with financial need.

Bobrow Family Scholarship: Funding for two scholarships, one for a Jewish male and one for a Jewish female freshman student. The scholarship recipients may receive the gift each year of full-time enrollment, as long as they continue to meet the academic and financial need criteria. Selection made by the Bobrow Scholarship Committee.

Boss Family Endowment: Two-thirds of income from endowment for scholarships in athletics. Recipients selected by the Director of Athletics and by the Student Financial Aid Office.

Raymond G. Bressler Memorial Scholarship: Established by the Class of 1938 on their 50th anniversary. Income from endowment for scholarships

awarded annually to students based on financial need

Nathalie Briggs Scholarship Endowment Fund: Income from endowment awarded to a member of the Lambda Beta chapter of Chi Omega. Selection made by Lambda Beta chapter.

Brittingham/Pezzullo Scholarship Endowment: Fund established to honor Mrs. Eva Stuebe, Tom Pezzullo, Jr., and Ines Rose Longo. Income from endowment to be awarded to an incoming, first-year student who is a Rhode Island resident and a first-generation college attendee and has demonstrated financial need.

Leroy F. Burroughs Memorial Scholarship: Income from endowment awarded annually to a student with financial need.

Ernie Calverley Endowed Scholarship: Income from endowment for a scholarship in athletics. Preference to basketball athletes. Recipients selected by the Department of Athletics.

Castellucci and Galli, Inc.: Income from endowment awarded annually to a student with financial need.

Hazel Ruth Cavnor Memorial Scholarship: Income from endowment for a scholarship awarded annually to students on the basis of financial need and the student's application in studies.

Harry C. Chandler '24 Memorial Scholarship: Income from endowment for a scholarship awarded to students with financial need.

Children of Alumni Scholarships for Academic Excellence: Six \$500 awards given annually to two sophomores, two juniors, and two seniors who are sons or daughters of URI alumni. Awards based on highest quality point average for the previous academic year among the pool of applicants in each category. Awards will be given only to those who submit formal application. Selection made by Alumni Association.

Citizens Bank Scholarship: \$500 awarded annually to students with financial need who are Rhode Island residents, with preference to minority students.

Philip H. Clark Scholarship Fund: Interest from endowment awarded to deserving undergraduate students at the University.

Commercial Monagement Service, Inc., Endowment: Annual grants to students demonstrating need with satisfactory academic standing.

Corner Kick Scholarship Fund: Scholarship awarded to a male soccer player recommended by the head coach of the URI men's soccer team and the Director of Athletics, as approved by the Student Financial Aid Office.

Lt. Parker D. Cramer '59 Memorial: Income from endowment to provide two annual awards (a saber and \$200) to outstanding students in Reserve Officers Training Corps (ROTC) having leadership qualities and high ethical standards. Selection made by the Department of Military Science.

Cranston Print Works Company Scholarships: Awarded to dependent children of employees. Available to qualified applicants for a maximum of two years at up to \$1,500 annually. Applications available at Office of Director of Human Resources, Cranston Print Works, Cranston, R.I.

A.T. Cross Company Scholarship Endowment: Income from endowment awarded to deserving students with financial need.

Frances B. DeFrance Memorial Scholarship: Annual award given on the basis of scholastic ability and financial need to a woman student who is a Rhode Island resident. Contributed by Chapter B, P.E.O., Kingston, R.I., in memory of one of its founders.

Paul DePace Scholarship Endowment: Income from endowment, established by PARI in honor of Paul DePace, director of URI Capital Projects, for scholarships awarded to students who are permanently disabled.

Dubee Family Endowment Scholarship Fund: Income from endowment to be awarded annually to an undergraduate student, preferably African-American, with a good academic record and genuine financial

Daniel R. Dye Memorial: Income from endowment awarded annually to a graduate of East Providence High School with financial need selected by the Student Financial Aid Office.

Frances R. and James W. Eastwood '37 Endowed Scholarship: Income from endowment for a deserving student with demonstrated academic promise. Selection made by the Admissions Office.

James J. Federico, Sr., '35 Endowed Scholarship: Income from endowment established as a permanent memorial in honor of James J. Federico and in recognition of his outstanding contributions, guidance, and example to youths at all levels of education and athletic participation. Income from the endowment will provide annual academic support for a student-athlete graduating from Westerly High School and matriculating at the University.

Ferland Corporation Endowed Scholarship: Income available to students with financial need. Preference given to employees or children of employees of the Ferland Corporation, citizens of Pawtucket, and graduates of St. Raphael's Academy.

William N. '17 and Anita Fritsch Memorial Scholarship: Income from endowment to be awarded to a student with financial need.

Thomas A. Gamon Memorial Endowed Scholarship: Income from endowment awarded annually to students from Aquidneck Island.

Beatrice and Tom Garrick, Sr., Endowed Scholarship: Income from endowment for a scholarship awarded annually to a minority student with financial need. Recipient to be selected by the Student Financial Aid Office. The fund was established with proceeds from the 1988 NCAA basketball tourna-

General Dynamics Electric Boat Division Scholarship: \$350 awarded, with preference to children of fulltime employees of the Quonset Point facility. The students must have financial need and must be studying business, engineering, or the sciences.

Olive Z. Godfrey Memorial Scholarship: Income from endowment for a scholarship awarded annually based on financial need. Recipient selected by the Student Financial Aid Office.

Morton and Ruth Grossman Scholarship: Income from endowment awarded annually to a student with financial need. Recipient selected by the Student Financial Aid Office.

Carlisle Hall '15 Endowed Scholarship: Income awarded to students with financial need, with preference to Kappa Rho Chapter of Phi Gamma Delta fraternity members and ROTC cadets.

Louis Raymond Hampton '42 Endowed Scholarship: Annual income from the endowment will be awarded based on genuine financial need and acceptable academic performance. First preference will be given to engineering students who are dependent children of Providence Gas Company em-

James H. Higgins Memorial Scholarship: Income from endowment awarded to men or women students with financial need. Gift is from the estate of Mrs. James H. (Ellen F.) Higgins.

James H. Higgins, Jr., Memorial Scholarship: Income from endowment awarded to students with financial need.

High School Model Legislature: Amount of general fee awarded to an incoming freshman who has given an outstanding performance in the Model Legislature. Application must be made for this award. Recipients selected by the program director of the high school.

Hoder Family Endowment: Income from endowment for scholarships transferred to the Harold Kopp Scholarship fund for football scholarships. Selection made by the football coach and the Director of Athletics.

Dr. Percy Hodgson Fund: Income from endowment awarded annually to students with financial need, with preference to students from foreign countries. Charles H. Hood: Scholarship awarded annually to an undergraduate student demonstrating financial

Horizons Retirement Center Endowment: Income from endowment added to the Harold Kopp Scholarship fund, to be awarded annually to football players. Selection made by the football coach and the Director of Athletics.

Francis H. Horn Testimonial Endowment: Income from gift of URI Alumni Association and gifts from Friends of Francis H. Horn, with special consideration to applicants from foreign countries who can qualify with respect to academic standing and financial need.

International Grant: A limited number of partial out-of-state tuition awards based on financial need awarded by the Office of International Students and Scholars, Grants are not available to first-year

A. Livingston Kelley Memorial Scholarship: Income from endowment, established by the will of A. Livingston Kelley, awarded to a worthy student with financial need who is a resident of Rhode Is-

Kenyon Piece Dyeworks, Inc., Scholarship: Income from endowment, with preference to employees or children of employees with financial need.

Paul J. Kervick Family Scholarship: Income from endowment awarded annually to deserving students from middle-income families, with preference to children of employees of Providence Steel and Iron Company with financial need.

Chester H. Kirk Endowed Scholarships: Awarded to children of AMTROL employees. Students without financial need will receive \$100; for other children of AMTROL employees, financial need and the amount of award will be determined by the Student Financial Aid Office.

Harry Knowles Memorial: Income from endowment, established by the will of Harry Knowles, awarded annually to students with financial need.

Harold Kopp Scholarship: Income from endowment for a scholarship in football awarded annually. Recipients selected by the football coach. For more information, see the Horizons Retirement Center, Rose Family, Pezzelli, John F. Quinn Fifth Quarter Club, and Hoder Family endowments.

lack Kraft Endowment for Basketball: Income from endowment for a scholarship in basketball established in honor of Jack Kraft, URI basketball coach and director of athletic giving, upon his retirement. Selection made by the Director of Athletics.

Eleanor Lemaire Women's Athletic Schalarship: Awarded to female student athletes in any college. Selection made by the Lemaire Committee.

Leviton Foundation, Inc., Scholarship: Awards available annually to children of employees of American Insulated Wire, Atlas Wire & Cable, Cable Electric Products, Leviton Manufacturing, Rhode Island Insulated Wire, and other affiliated companies. Preference given to applicants who are undergraduates with financial need and best scholastic standing.

Austin T. Levy Memorial: Income from endowment awarded annually to students with financial need, with preference to graduates of Burrillville High School.

*Little Family Foundation: Junior Achievement Fellowships for full-time graduate business study. Recipients must have been Junior Achievement participants or advisors. Preference given to Rhode Island residents with two or more years of work experience, chosen by the graduate business faculty. If no Rhode Island residents are eligible, out-of-state students may be chosen.

*Edward Marth Scholarship: \$500 annual grant to a graduate student enrolled in the labor relations and industrial management program. Selection made by the Labor Relations and Industrial Management Program.

Minorities Scholarship Endowment: Income from endowment awarded annually to a minority student with financial need. Recipient selected by the Student Financial Aid Office. Funds donated by the URI Alumni Association.

The Moore Company Scholarship: Awarded annually to students with financial need, with preference to children of employees of the George C. Moore Company, in Westerly, Carr-Fulflex, Inc., in Bristol, and Darlington Fabrics, in Westerly.

Richard B. Morrison Memorial Scholarship: Income from endowment awarded annually to Rhode Island residents with financial need.

Daniel J. Murray and Blanche R. Murray Family Endowed Scholarship: Income from endowment awarded annually to a student with financial need.

Carl Myllymaki Memorial Scholarship Endowment: Income from endowment for a Westerly High School senior who participates in either sports or student government and who will be attending the University. Carl Myllymaki was a URI student who was killed in action in Vietnam.

Native American Scholarship: Annual grant awarded to a student with financial need who is a Native American. (Tribal documentation must be provided.)

Keith Nester Scholarship: Awarded annually to a member of a fraternity or a sorority in honor of Keith Nester, who retired after 23 years as director of the Fraternity Managers Association.

Andrew J. Newman—John W. Chapman Scholarship: Income from endowment awarded annually to a worthy male student in need of financial assistance, preferably to a member of the Lambda Chi Alpha fraternity. Recipients selected by the Student Financial Aid Office.

Mrs. Dorothy M. Noble Endowed Scholarship: Income from endowment for two \$150 book awards presented each spring to members of the Kappa Rho chapter of Phi Gamma Delta. Selection made by the Kappa Rho chapter.

Janice Paff Memorial Scholarship: Income from endowment awarded to a student in the College of Continuing Education, enabling him or her to take an initial course and purchase books. Recipients selected by the Dean of CCE.

Pezzelli Endowment: Income from endowment to be added to the Harold Kopp Scholarship fund for annual award to football players. Selection made by the football coach and the Director of Athletics.

Edward E. Pierce and Ida Fisher Pierce Scholarship: Income from endowment for a scholarship based on financial need.

Brinton C. Piez Golf Endowment: Income from endowment to be awarded to a URI student golfer with financial need. Selection made by committee.

Howard E. Possner, M.D., '37 and Dorothy Babcock Possner '37 Scholarship: Income from endowment awarded annually to a premed student in good academic standing and with genuine financial need

Col. John Joseph '35 and Mary Drew Prybyla Rhode Island National Guard Scholarships: Income from endowment to be awarded annually in \$100 to \$500 amounts to students on any URI campus who are eligible members of the R.I. Army National Guard or the R.I. National Guard. Awards will be made by the Adjutant General of the State of Rhode Island. Applications are available at the Office of the Adjutant General, Armory of Mounted Commands, 1051 North Main St., Providence, RI 02904-5717.

John F. Quinn Memorial Scholarship: Income from endowment for a scholarship awarded on the basis of financial need.

John F. Quinn Memorial Scholarship Fifth Quarter Club: Income from endowment for a scholarship awarded annually to a football player. Recipient selected by the football coach, with the approval of the Director of Athletics. Also see the Harold Kopp Scholarship.

A. Robert Rainville Memorial Scholarship: Income from endowment awarded annually to at least one senior from West Warwick High School. The recipient(s) will be selected by the Student Financial Aid Office. Preference will be given to candidates who have shown some evidence of community involvement prior to application. Following selection, Mrs. Robert (Henriette) Rainville (or her family) will be informed of the name(s) of the recipient(s) and offered the chance to meet with the recipient(s).

Ram Club Scholarship: Income from endowment designated for support of the general athletic scholarship program. Recipients selected by the Department of Athletics.

Rau Fastener Company Scholarship: Income from endowment awarded annually to students, with preference to children of Rau Fastener employees.

Elton Rayack Scholarship: Scholarship awarded annually to a junior demonstrating financial need and scholastic achievement.

Louis M. Ream Memorial Scholarship: Income from endowment awarded annually to students with financial need.

Mary Ellen Reilly Scholarship: \$500 awarded annually to a woman student (sophomore or above) on the basis of academic excellence and financial need

Reserve Officers Training Corps (ROTC) Army Scholarship Program: Two-, three-, and four-year scholarships are available to outstanding young students who are seeking not only a commission as an Army officer but a path of dynamic career opportunities. Selection is based on applicant's achievement, not financial status. Includes full tuition and fees, and up to \$1,000 for the school year, paid directly to the student. Contact the Department of Military Science

Rhode Island Women's Club of Providence Endowed Scholarship: Income from endowment for a scholarship awarded annually to a woman (or women) who is a full-time meritorious student at URI. Scholarship restricted to worthy and needy students. Recipients selected from among nominations from the academic deans by the Office of the Provost.

Pasquale and Rosaria Rizzi: Income from endowment awarded annually to two or more junior or senior members of the Beta Psi Alpha chapter of Theta Delta Chi fraternity on the basis of scholarship, achievement, and financial need.

Mary L. Robinson Schalarship Fund: Income from fund established by the will of Anna D. Robinson in memory of her mother, awarded to students with financial need.

Rose Family Endowment: Income from endowment added to the Harold Kopp Scholarship fund.
Awarded annually to a football player. Selection made by the football coach and the Director of Athletics.

Samuel and Gertrude J. Rosen Scholarship Endowment: Income from endowment fund awarded to students with financial need.

N. Edward Rosenhirsch Memorial Scholarship: Income from endowment awarded to students with financial need.

Sarni Family Endowment: Income from endowment to be awarded annually for up to one-half of tuition costs. First preference to needy, qualified first-generation students of at least one Italian parent. Scholarships to be distributed equally among the

A.A. Savastano '32 Endowed Scholarship: Income from endowment for a \$500 scholarship in athletics awarded annually to a high school athlete letter winner with financial need. The Student Financial Aid Office or URI coaches may propose the recipi-

Joseph J. Scussell '31 Endowed Scholarship: Income from endowment to be awarded annually on the basis of academic performance and financial need.

Aleck Slade Scholarship: Income from endowment to be awarded annually to a student who is a pole vaulter (first preference), a track and field athlete from New York City (second preference), or a track athlete from Fall River (third preference). Any matriculated student becomes eligible if no students meet the three preferences. Recipient selected by the Director of Athletics.

Edwin S. Soforenko Endowed Scholarship: Income from endowment to be awarded annually to deserving students on the basis of need, with first preference to employees of Insurance Underwriters, Inc., and their families.

Harold B. Soloveitzik '35 Endowed Scholarship: Income from endowment to be awarded annually to worthy students with financial need. First preference to students from the South County and Pawcatuck area.

Michael Spero '34 Scholarship Endowment: Income from endowment to be awarded annually to American-born undergraduate students on the basis of normal progress toward completion of the baccalaureate degree and financial need.

Stan Stutz Memorial Scholarship: Income from athletic scholarship to students with financial need, with preference given to residents of Westchester County, N.Y. Selection made by the Director of Athletics.

Student-to-Student Scholarship: Income from endowment fund awarded annually to a student with financial need. Recipient chosen by the Student Financial Aid Office.

Alice M. Talbot Memorial Scholarship: Income from endowment established by a \$10,000 gift from the Salvation Army in appreciation of Miss Talbot's past philanthropy to the Salvation Army, and added to by the Ted Clarke family and the URI Century Club. Awarded annually to a University student selected in accordance with guidelines of the URI Century Club for scholarship recipients and with approval of the Director of Athletics.

Frederick C. Tanner Memorial Fund: Several awards available annually to students with financial need, with preference given to sons and daughters of Federal Products Corporation employees.

Frederick D. Tootell Memorial Scholarship: Income from endowment awarded annually to a student. Selection made by the scholarhip committee of the

Triangle Club of Kingston: Minimum of \$200 awarded annually to a student from Rhode Island with financial need.

The Cecilia T. Trubiano Memorial Endowment: Awarded to incoming freshman students in the Talent Development program who graduated from the Providence public school system in recognition of Cecilia Trubiano's commitment and dedication to the children of the Providence public schools. Recipient selected by Talent Development and the Student Financial Aid Office.

Francesco and Mariannina Ucci Family Scholarship Endowment: Income from endowment awarded annually to students who have completed their sophomore year and are majoring in a scientific discipline including, but not limited to, chemistry, engineering, biological or physical science, pharmacy, computer science, or premedical studies. The recipient is selected by the Student Financial Aid Office, with preference given to graduates of West Warwick High School. This fund was established by Pompelio A. Ucci, Class of 1943.

University Grant: The Board of Regents has made available a sum of money to be used for scholarships. While it is expected that in any year the great majority of these scholarships will be awarded to residents of Rhode Island, in certain exceptional cases out-of-state students may qualify.

URI Alumni Association: Income from endowment for scholarships awarded annually on the basis of financial need. (See also Carl R. Woodward, Francis H. Horn, Thomas V. Falciglia, and Presidential Scholarships.)

URI Alumni Association Presidential Scholarships: \$1,000 awarded for the senior year to a son or daughter of a URI alumnus(a) who has the highest cumulative quality point average for three years at URI. In the event of a tie, the award is to be divided. Application to be made through the Alumni Association Office.

URI Alumni Ram Club Memorial: Offered in honor of Rhode Island alumni who sacrificed their lives in two world wars. Recipients selected on the basis of financial need, campus citizenship, scholastic ability, and leadership as evidenced by participation in sports and other extracurricular activities. Selection made by Alumni Ram Club.

URI Alumni Rhode Island HIgh School Scholastic Scholarships: Ten \$1,000 awards to incoming URI freshmen based on scholastic achievement, SAT scores, and overall record in humanities, psychology and sciences, the performing and studio arts, pure and applied sciences, and professional and human services. Open to all Rhode Island high school seniors. Selection made by Alumni Association.

URI Class of 1899 Memorial Scholarship: Income from endowment for a scholarship awarded annually to students on the basis of financial need.

*URI Class of 1930 Endowed Scholarship: Income from endowment for two scholarships awarded annually to undergraduate or graduate students on the basis of financial need and academic ability. Undergraduate recipients selected by the Student Financial Aid Office; graduate recipients selected by the Graduate School.

URI Class of 1931 Memorial Scholarship: Income from endowment for scholarships awarded annually to students on the basis of financial need.

★URI Class of 1933: Income from endowment for a graduate fellowship.

URI Class of 1935 Memorial Scholarship: Income from endowment for scholarships awarded annually on the basis of financial need.

URI Class of 1936 Scholarship Endowment: Income from endowment for scholarships awarded annually to undergraduate students on the basis of financial need with preference given to lineal descendants of members of the Class of 1936. If no relatives of the Class of 1936 apply, the awards will be made to any applicants the University selects based on financial need and academic perfor-

URI Class of 1937 Memorial Scholarship: Income from endowment for scholarships awarded annually on the basis of financial need.

URI Class of 1938 Memorial Scholarship: See Raymond G. Bressler Memorial Scholarship.

URI Class of 1939 Memorial Scholarship: Income from endowment for scholarships awarded annually on the basis of need.

URI Class of 1940 Memorial Scholarship: Income from endowment for scholarships awarded annually on the basis of need.

URI Class of 1941 Memorial Scholarship: Income from endowment for scholarships awarded annually on the basis of financial need.

URI Class of 1942 Memorial Scholarship: Income from endowment for scholarships awarded on the basis of financial need.

* URI Foundation Fellowships: Income from endowment for a graduate student fellowship. Recipient selected by the Dean of the Graduate School from University-wide recommendations.

URI Foundation Trustees Scholarships: Income from endowments appropriated annually for scholarships and awarded by the Student Financial Aid Office.

URI Parents Fund Scholarship: Income from endowment awarded annually to students with financial need.

URI Patrons Association Scholarship: Income from \$5,000 endowment established by the association as a memorial to Dr. Quinn, former Vice President for Student Affairs, to be awarded annually to a student with financial need.

URI Patrons Fund: Scholarship awarded annually to a student with financial need.

Wal-Mart Competitive Edge Scholarship Fund:
Awarded to an incoming freshman student majoring in a technology-related field. Recipient must be a Rhode Island resident; have applied for financial aid; demonstrated high academic achievement, community service, and leadership in high school; and be registered for at least six credits. This award is renewable each year providing the student maintains a 3.00 GPA, be enrolled full-time each semester, and continues in a technological area. Selected by the Student Financial Aid Office.

Washington Trust Company: Awarded annually to an undergraduate student from Rhode Island with financial need.

Paul Watelet '34 Athletic Scholarship: Income from endowment for athletic scholarships, with first preference given to a participant in URI men's basketball. Selection made by the Director of Athletics.

Westerly Lions Club: Income from endowment awarded annually to graduates of Westerly High School with financial need, with preference given to upperclassmen.

George F. Weston Memorial: Income from a fund established by the Providence Technical High School Athletic Field Association awarded annually to graduates of Rhode Island high schools and college preparatory schools who demonstrate financial need. Preference is given to former students and descendants of former students and teachers of Technical High School of Providence.

Francis J. Wilcox '51 Memorial Scholarship: Income from endowment awarded annually on the basis of financial need. Recipient selected by the Student Financial Aid Office.

David R. Wilkes Scholarship: Income from endowment awarded annually to a student with financial need, with preference given to a resident of Rhode Island.

Frank and Natalie Williams '40 Endowed Scholarship: Income from endowment for scholarships to undergraduate students in good academic standing with genuine financial need. First preference to students from Rhode Island.

*Woman's Seamen's Friend Society of Connecticut: Awards to undergraduate and graduate students from Connecticut who are in marine-oriented programs and have financial need.

Carl R. Woodward Endowed Scholarship: Income from Alumni Association gift available annually to students with financial need.

Lt. Charles Yaghoobian, Jr., '65 Memorial Scholarship: Income from endowment available to a student with financial need, with first preference to residents of Blackstone Valley, R.I., majoring in physical education, and second preference to residents of Blackstone Valley regardless of major.

Arts and Sciences

* Ward Abusamra Scholarship in Music and Voice: Income from endowment for a scholarship in music awarded annually to a graduate or undergraduate music major on the basis of merit. Preference given to students concentrating in voice or chorus. Recipient to be selected by the Department of Music Recruitment and Awards Committee during annual spring auditions.

Heidi Allen Memorial Scholarship: Income from endowment fund, established by parents and friends of Heidi Allen, to be awarded to a student with financial need who is a political science major.

Beaupre Family Scholarship: Income from endowment awarded to a chemistry major with junior standing. Recipient should be a married student (preference given to a married student with at least one child) with financial need and a 2.80 GPA or higher who is a resident of Rhode Island. The student may, in addition, receive the award in the senior year as long as criteria are still being met. If a chemistry major does not meet all of the above criteria, the award may be given to a qualified student in any of the other sciences.

Bessie D. Belmont Memorial Scholarship: Gift of Dr. and Mrs. Ralph S. Belmont in memory of his mother. Income awarded annually to an undergraduate majoring in natural sciences on the basis of scholarship and/or diligent application and financial need.

- * Stanley Berger Memorial Scholarship: Income from endowment to be awarded annually to a graduate student in clinical psychology. Recipient selected by the Department of Psychology.
- * Bertran M. Brown '36 Endowment: Income from endowment used for graduate student support in the Department of Chemistry.
- R. Craig Caldwell Memorial Scholarship: Income from endowment for a scholarship in computer science awarded annually to a student majoring in this field on the basis of scholastic ability alone. Recipient selected by College of Arts and Sciences.

Robert A. DeWolf Scholarship: Income from endowment for a scholarship in zoology awarded annually. Recipient selected by the Department of Zoology.

Jon F. Dodd Scholarship: Income from endowment awarded annually to a student with junior standing majoring in biology or an ocean-related field. The recipient should be from Rhode Island, have demonstrated financial need, and have at least a 3.00 GPA.

* Catharine and Walter Eckman Memorial Scholarship: Income from endowment to be awarded annually to a graduate student in the humanities (including English, comparative literature, languages, history, philosophy, music, and political science). Recipient selected by the Graduate School Committee on Scholarships and Fellowships.

Thomas V. Falciglia Honorary: Income from endowment awarded annually to a music major concentrating in piano, organ, orchestral instrument, or voice on the basis of musical achievement or contribution to the music program, or to a musically talented freshman, with preference to students with financial need. Selection made by the Department of Music.

Fine Arts Scholarship: Scholarship awarded annually to a music major demonstrating financial need.

Lillian and Benjamin Fine Memorial Scholarship: Income from endowment awarded annually to an undergraduate in journalism with financial need.

* Graduate Library School Scholarship: Income from endowment awarded annually to a student enrolled in the Graduate Library and Information Studies program. Recipient selected by the Graduate Library School.

Dr. Adolphus C. Hailstork III Music Scholarship for Minority Students: Awarded on the basis of merit to minority students entering the Department of Music. Selection made by the Department of Music.

Mabel T. Harrison Memorial Grant in Music: Scholarship grant awarded annually to a meritorious student(s) of a string instrument. Recipient(s) to be selected by the Department of Music Recruitment and Awards Committee. Recipients must maintain a "qualified academic standard."

Frederick and Katherine Jackson Scholarship Endowment: Income from endowment for a scholarship awarded annually to a student with financial need in the College of Arts and Sciences who is enrolled in the physical, biological, or social sciences or in the humanities.

"Mother" Jones Endowed Scholarship: \$500 awarded annually to a student in the Women's Studies program with financial need. Selection made by the Women's Studies Program Committee.

June Rockwell Levy Memorial: Income from endowment awarded annually to music students with financial need.

Henry H. Mackal Endowed Scholarship: Income from endowment awarded to students with financial need and majoring in engineering, mathematics, natural sciences, or physical education.

John T. McCarthy '36 Memorial: Award available annually for a junior or senior majoring in zoology, with preference given to a student planning to attend a veterinary school. Nautilus Nest Scholarship: Awarded annually to a junior or senior enrolled in electrical engineering, physics, or computer science, on the basis of academic achievement and financial need. Recipients must be residents of Rhode Island or Connecticut and citizens of the United States.

Thomas R. Pezzullo Memorial Scholarship Endowment Fund: Income from endowment awarded to an undergraduate student on the basis of talent in theatre and on financial need. Recipient selected by the Theatre Department and the Student Financial

Nancy Potter Endowment: Income from endowment awarded to a high-ranking junior majoring in English. Recipients selected by the Department of Enalish.

Max Rosen Memorial Scholarship: Income from endowment awarded annually to a student with financial need, preferably a junior, majoring in history with emphasis on American history. Selection made by the Department of History.

Mary A. Silverman-Ravin, M.D., '44 Scholarship: \$250 given annually to the highest-ranking female premedical student at the close of her junior year.

Donald Strauss Legislative Internship Endowment: Income from endowment given to a member of the junior class to finance a summer at the Rhode Island Legislature, serving either a state senator or a state representative. Recipient selected by Department of Political Science designee.

Mildred C. Thelen Endowed Scholarship in Spanish: Scholarship grant awarded annually to a student majoring in Spanish on the basis of meritorious performance and financial need.

URI-Fleet Scholarship: Annual scholarship awards of \$2,000 for academically talented Rhode Island high school students with demonstrated financial need. The recipients must major either in economics or in business administration and maintain an overall 3.00 GPA to retain the scholarship. Recipients selected by a committee of faculty from the Department of Economics and the College of Business Administration.

* Milton Waltcher '41 Memorial Endowment: Income from endowment for annual awards to go to a deserving chemistry graduate student during summer months and to a deserving undergraduate student in mechanical engineering.

Frank L. Woods Memorial Scholarship: Established by his family and friends as a permanent memorial in honor of Dr. Woods, URI professor of German and linguistics, the scholarship provides for support for a junior or senior majoring in German or German linquistics. Recipients will be chosen by members of the German faculty. Awards for tuition, fees, and other University expenses will be made by the Student Financial Aid Office.

Business Administration

American Production and Inventory Control Society, Providence Chapter (APICS): Awarded annually to a senior with a major or minor in production and operations management who is also a member of

Anderson Family Trust: Income from endowment for a scholarship to an insurance major in the College of Business Administration.

Dr. Winfield S. Briggs Memorial: Income from endowment available to students of accounting with financial need.

Frank and Arthur Fiorenzano Endowment: Income from endowment awarded annually to juniors and seniors in the College of Business Administration on the basis of financial need, with consideration given to academic excellence. Preference given to Rhode Island residents, or F.A.F., Inc., employees and their children.

Geiger Family Minority Scholarship Fund: Annual scholarship support for a Rhode Island student of African-American descent (including biracial) majoring in business. The student must maintain good academic standing according to the policy of the University and the College of Business Administration, with demonstrated financial need.

Francis S. Goff, Ir., '35 Endowed Scholarship: Income from endowment awarded annually to undergraduate students majoring in business on the basis of good academic standing and genuine financial need. First preference to employees or children of employees of Providence Mutual Fire Insurance Company. Second preference to students from Rhode Island.

Saul and Alfred Goldstein Scholarship: Income from endowment available to a student with financial need, with preference to College of Business Administration students.

*George and Lois Graboys Minority Student Endowment Fund: Awarded annually to minority students with financial need wishing to pursue a business degree. First preference to undergraduates, but graduate students will be considered. The minimum QPA for an undergraduate recipient is 2.70 and for a graduate student 3.00. Scholarships will be awarded to eligible students with the highest grade point average. Recipient selected by the Student Financial Aid Office.

Independent Insurance Agents of Rhode Island Scholarship: \$2,500 awarded annually to deserving students in risk management and insurance. Selection made by the Department of Finance.

Northwestern Mutual Scholarship: \$1,000 grant scholarship awarded to students who have demonstrated ability and aptitude in the areas of insurance sales. Recipients chosen by a selection committee.

Ralph C. Potter Endowed Scholarship: Income from endowment available to a student in the College of Business Administration with financial need.

Rhode Island Society of Certified Public Accountants: An annual scholarship award of \$200 to a sophomore or junior majoring in accounting who has a good scholastic record. Selection made by the Department of Accounting.

Brooksby A. Sanderson Memorial Scholarship: Income from endowment awarded annually for a scholarship to a worthy student with financial need who is majoring in accounting in the College of Business Administration.

URI-Fleet Scholarship: Annual scholarship awards of \$2,000 for academically talented Rhode Island high school students with demonstrated financial need. The recipients must major either in business administration or in economics and maintain an overall 3.00 GPA to retain the scholarship. Recipients selected by a committee of faculty from the College of Business Administration and the Department of Economics.

Engineering

James L. Baldwin Memorial Scholarship: Income from endowment for a scholarship awarded annually to a civil engineering student. Recipient selected by the Student Financial Aid Office.

A.J. Beaudoin Memorial Scholarship (Electrical League of Rhode Island): Two \$1,000 grants awarded annually to Rhode Island residents who are majoring in electrical engineering and who have financial need.

Norman H. Borden Scholarship: Income from endowment established in the memory of Norman H. Borden to be awarded to a student majoring in chemical engineering.

Ronald and Lillie Bowden Memorial Scholarship: Income from endowment for a scholarship to a student enrolled in the College of Engineering.

George A. Brown Memorial Scholarship: Income from endowment for a scholarship awarded to a student majoring in mechanical engineering.

Daniel O. Cargill Scholarship: Income from endowment for a scholarship awarded annually to a student in civil engineering. Recipient selected by the Student Financial Aid Office.

Peter Carley '79 Memorial Scholarship: Income from endowment for a scholarship awarded on the basis of financial need, academic performance, or a combination of both, with first preference given to civil engineering students.

* Albert E. Carlotti Endowment: Income from endowment for undergraduate and graduate students enrolled in the College of Engineering.

Dr. David J. Chronley Endowed Fund in Chemical Engineering: Annual creativity awards for junior or senior undergraduate students in chemical engineering and need-based undergraduate scholarships in chemical engineering. Awards and scholarships awarded at the discretion of the department chair-

Francis J. Connell '49 Memorial Endowment: Income from endowment awarded annually for a scholarship in civil engineering to a junior or senior on the basis of genuine financial need and acceptable academic performance. First preference to a student from Newport; second preference to a student from Rhode Island.

Day Family Endowed Scholarship: Annual scholarship awarded to a minority student entering as a fulltime freshman who shows academic promise in the field of engineering and has demonstrated financial need. This scholarship will be renewed annually if a GPA of 3.00 or higher is maintained and other criteria are met, as outlined by the donor. Preference will be given to (in the following order): graduates of Middletown High School, residents of Newport County, and Rhode Island residents.

Kenneth A. Epstein Engineering Scholarship: Annual grant for a scholarship to a student enrolled in the College of Engineering.

George Geisser, Sr., Endowed Scholarship: Income from endowment awarded annually to civil engineering student(s) in good standing and with fi-

*Gray Family Endowment: Income from endowment for a scholarship to a graduate student in the Department of Chemical Engineering doing research in the field of efficient supply and use of energy. Recipient selected by the College of Engineering.

GTE Lighting Products Scholarship: Annual award for a scholarship to assist students whose courses of study are in technical fields related to manufactur-

Amos Kent P.E. Memorial Scholarship: Income from endowment created by the National Council of Engineering Associates. Awarded to a student in engineering who is entering the senior year and has ability, motivation, and financial need. Selection made by the College of Engineering.

Mason B. Kingsbury Memorial Scholarship: Income from endowment for a scholarship in engineering awarded annually. Recipient selected by the College of Engineering.

James M. Lenehan Memorial Scholarship: Income from endowment to be awarded to a student in the College of Engineering with academic ability and financial need. First preference given to a student majoring in mechanical engineering whose practical experience or schooling and activities demonstrate that the student is a self-starter likely to become a manager of engineers.

Gabriel Lengyel Scholarship: Income from endowment established by the late Ruth Braun for a scholarship to be awarded annually to the electrical engineering major with the most outstanding scholastic achievement.

Charles A. Maguire and Associates Scholarship: Income from endowment awarded to students in the field of engineering with financial need.

Carleton Maine Fund: Income from endowment for a scholarship awarded annually to a deserving student in environmental, civil, or related engineering specialties who is in need of financial assistance. Recipient selected by the Student Financial Aid Of-

Angelo A. Marcello Memorial: Income from endowment for a scholarship in civil engineering awarded annually to a junior or senior, based on financial need with consideration given to academic excellence. Minimum award \$350; maximum, 50 percent of tuition. Selection made by the Department of Civil and Environmental Engineering.

Messinger Family Scholarship: Income from endowment to be awarded in engineering to a Rhode Island resident with financial need and at least a B academic average. The award will be made to an incoming freshman student and continue to the same student for the four years, assuming the criteria are continually met. Selection made by the Dean of Engineering.

Arthur J. Minor Memorial: Income from endowment available annually to a student with financial need.

Vincent E. and Estelle Murphy Scholarship Fund: Income from endowment established in the memory of Vincent E. Murphy awarded to a meritorious student in the College of Engineering.

Vito A. Nacci Civil Engineering Scholarship: Income from endowment awarded annually to a student in civil engineering.

Henry J. Nardone Family Endowment: Income from endowment awarded annually to a student in mechanical engineering. Preference will be given to an incoming freshman who graduated from a Rhode Island high school and has demonstrated financial need.

Piacitelli Family Endowed Scholarship Fund: Awarded annually to provide in-state tuition and fees to one student per year who is worthy and deserving. The Dean of the College of Engineering, in cooperation with the college's academic advisor, will work in concert with the donors to honor and fulfill the scholarship award and the donors' intentions on an annual basis.

Grant H. Potter Memorial: Income from endowment, a bequest of Warren L. Offer, for scholarships to students with financial need, with preference to Rhode Island engineering students specializing in the field of electronics or aeronautics.

Rhode Island Public Works Association Endowed Scholarship: \$500 awarded annually to a junior from Rhode Island with financial need and good academic standing who is majoring in civil engi-

Joseph G.A. Riccio Civil Engineering Scholarship: Income from endowment to be awarded annually in civil engineering. Preference given to Bristol, R.I., residents who are members of Theta Delta Chi fraternity. Must have good academic record and genuine financial need.

Halkey K. Ross '33 Scholarship Endowment Fund: Income from endowment to be awarded annually to a student in engineering on the basis of financial need and academic achievement.

John L. Slocum Endowed Scholarship in Civil Engineering: Income from endowment awarded to a deserving and worthy student in civil engineer-

Dr. Malcolm L. Spaulding and Nicole Cornillon Endowed Scholarship Fund in Ocean Engineering: Awarded annually to an undergraduate student in the ocean engineering program. Priority and preference given to students of outstanding scholastic merit and achievement, at the discretion of the chairperson of the Department of Ocean Engi-

Toray Plastics America, Inc., Scholarship: Income from endowment for eight students in engineering; specifically, in electrical, mechanical, or chemical engineering. Two scholarships will be awarded to children of Toray employees based on need and scholastic achievement. Two scholarships will be awarded to graduating seniors of North Kingstown High School, one based on need and the other on scholastic achievement. Two scholarships will be available to minority and women students who reside in Rhode Island, one based on need and the other on scholastic achievement. And two scholarships will be given to students who have demonstrated high scholastic achievement, one based on need and achievement and the other based solely on achievement.

H. Winfield Tucker, Jr., '43 Endowed Engineering Scholarship: Income from endowment awarded annually to an engineering student. Preference given to graduates of Washington County, R.I., high schools. Based on genuine financial need and academic performance.

Royal Wales Endowed Scholarship: Awarded annually to a graduating senior from South Kingstown High Schoool, in Wakefield, R.I., who is a full-time student at URI, meets minimum academic requirements, demonstrates satisfactory effort, and has demonstrated financial need. Preference given to a student enrolled in the College of Engineering. If there is no candidate from South Kingstown High School, the award will be given to a graduating senior from Rhode Island who meets, in order of preference, the above requirements.

Human Science and Services

Glenn C. Brown Endowed Dental Hygiene Scholarship: Income from endowment awarded annually in the clinical second semester to a junior or senior with good academic performance. Genuine financial need may also be considered. Selection made by the Department of Dental Hygiene.

Elizabeth W. Christopher Memorial Scholarship: Income from endowment awarded to students in home economics who have completed their fourth semester at the University on the basis of scholarship and evidence of potential service and concern for the welfare of others. Selection made by the College of Human Science and Services.

Ruth E. Curran Endowment: Income from endowment awarded to students in home economics. Selection made by the College of Human Science and Services.

Joan Heaton '86 Memorial and Jennifer and Melissa Heaton Endowed Scholarship: Awarded to students in the human services disciplines. Selection made by the College of Human Science and Services.

Susan M. Marsella Scholarship: Awarded to a dedicated and academically deserving student pursuing a career in fashion design who is in need of financial assistance.

Mabel Streeter Perrin: Income from endowment awarded annually to students in home economics on the basis of scholastic performance and financial need. Restricted to Rhode Island residents.

*Dr. and Mrs. James P. Reid Endowed Scholarship: Income from endowment for a scholarship in physical education awarded annually to a master's or doctoral student on the basis of academic scholarship, professional interest, and involvement. Preference to second-year students. Selection made by the Reid Scholarship Committee of the Department of Physical Education.

Andrew W. Rotelli III Memorial Scholarship: Awarded to needy students who had formerly attended Bishop Hendricken, are enrolled in the physical education program, and are seeking a career in sports-related physiology or in physical therapy.

Jill Sawyer Memorial Scholarship: Income from endowment for a scholarship in merchandising or fashion design awarded annually to a sophomore, junior, or senior on the basis of financial need. Preference given to members of Alpha Xi Delta sorority. Recipient selected by the Student Financial Aid Office.

Nursina

Emilie C. '16 and Norman H. '15 Borden Nursing Scholarship: Income from endowment awarded annually to a nursing student with financial need.

M. Adelaide Briggs Memorial: Income from endowment available to nursing students with financial need.

College of Nursing Scholarship: Awarded to undergraduate students majoring in nursing. The grant will be administered by the Student Financial Aid

Mildred J. Galanti Endowed Scholarship: Income from endowment for a scholarship in nursing.

Morton and Ruth Grossman Scholarship in Nursing: Income from endowment for a scholarship awarded annually in the College of Nursing. Recipient selected by the College of Nursing.

Oscar and Laurette Lapierre Memorial: Income from endowment to a student in the College of Nursing who is from Central Falls, R.I., and has demonstrated financial need.

Gladys N. Longo Scholarship for the College of Nursing: Income from endowment for a fourth-year nursing student, entering the fifth year. Recipient selected by the Student Financial Aid Office.

Roddy Charitable Trust Endowed Scholarship: Income from endowment available to students in the College of Nursing on basis of financial need and academic ability.

Sigma Theta Tau, Inc., Delta Upsilon Chapter Scholarship: \$750 grant awarded annually to a full-time student in the College of Nursing who has completed two or more clinical nursing courses on the basis of academic grade point, evidence of leadership, creativity, professional commitment, and financial need. Application forms available at the College of Nursing.

Ella Soloveitzik '37 Memorial Scholarship: Income from endowment to be awarded annually to worthy nursing students pursuing a teaching career. First preference to students from the South County and Pawcatuck areas.

Catherine H. Suda/Edward S. Pratt Memorial Schalarship: Income from endowment for a scholarship awarded annually to a student in the College of Nursing. First preference to students from North Kingstown: second, Washington County; third, Rhode Island; and fourth, other qualified students. Recipient selected by the Dean of the College of Nursing.

Barbara Tate Scholarship in Nursing: Income from endowment awarded annually to a junior or senior nursing student with good academic standing. Award based on clinical competence. Applications available at the College of Nursing.

Frederick Herman '22 and Doris Louise Titchener Scholarship: Annual award to a student in the College of Nursing with financial need.

Esther A. Watson Memorial Scholarship: Income from endowment awarded annually to students, with first preference given to graduates of the Memorial Hospital School of Nursing; second preference to relatives of such graduates. Selection made by the College of Nursing.

Louisa White Student Loan Endowment: Income from endowment available for loans to needy nursing students at the request of the Dean of the College of Nursing.

Oceanography

- * Farmer Family Trust—The Pacifico A. Colicci Award in Oceanography Engineering: Award made each year at graduation to a student at the Graduate School of Oceanography who demonstrates exceptional vision and creativity in fashioning instruments for use in oceanography research.
- ★ Farmer Family Trust—The Henry S. Farmer Award in Biological Oceanography: Award made each year to a student in biological oceanography who demonstrates exceptional creativity and interest in preserving and developing the oceans as a biological resource.
- * Friends of Oceanography Fellowship: Awarded to new oceanography students on the basis of need and merit.
- ★Graduate School of Oceanography Alumni Endowment: Income from endowment awarded annually to a student from the Graduate School of Oceanography on the basis of scientific proposals.
- * Graduate School of Oceanography Alumni Fellowship: Award provides fellowship support, based on academic record and proposed scientific research, for master's or doctoral students in any field of oceanography.
- ★ Greenwich Bay Power Squadron and Women's Auxilliary Award: Awarded annually to a graduate student in biological oceanography.
- ★ Joshua MacMillan Graduate Fellowship: Income from endowment for a fellowship awarded annually, based on genuine financial need, to students at the Graduate School of Oceanography with a marked interest in research related to fisheries science.
- *Lance A. Ricci Fellowship: Income from endowment awarded annually to a financially deserving graduate student. Recipients selected by the Graduate School and the Graduate School of Oceanography.
- * Ada L. Sawyer Endowment for Oceanography: Income from endowment awarded annually to an M.A. or Ph.D. student on the basis of financial need and/or merit. Recipient must be born in the United States and be in good standing with the University. Preference given to a woman demonstrating the spirit and ingenuity of Ada L. Sawyer.
- *Andrew D. Starr Memorial: Awarded annually to a graduate student with financial need.
- ★ Germaine and Francis Webb Graduate Fellowship in Oceanogrophy: Income from endowment awarded annually to a student from the Graduate School of Oceanography based on genuine financial need and research related to relevant marine environ-

mental issues. The recipient is selected by the Dean of the Graduate School of Oceanography.

Pharmacy

Orlando Buonanno Memorial Scholarship: Awarded annually to a pharmacy student on the basis of financial need. Selection made by the College of Pharmacy.

Burroughs Wellcome Company Scholarships: Annual grant for scholarships to outstanding students of pharmacy based on a criterion of excellence established by the college.

Harriet A.F. Claffin Scholarship: Income from endowment awarded to students with financial need in the College of Pharmacy.

Sidney Cohn Memorial Scholarship: Income from bequest awarded to a student from the College of Pharmacy with financial need. Selection made by the College of Pharmacy.

Consumer Value Stores (CVS): Three \$500 awards to students who are in their fourth or fifth year with satisfactory academic standing, financial need, and interest in a career in retail (community) pharmacy, with high preference to children of CVS employees. Selection made by the College of Pharmacy.

David R. DeFanti Memorial Scholarship: Income from endowment for a scholarship to be awarded to a student in the College of Pharmacy.

Douglas Drug, Inc., Scholarship: \$500 awarded annually to a student in the College of Pharmacy.

Jack Eckerd Corporation Scholarship: Annual grant awarded to students in the College of Pharmacy. First preference to sons or daughters of Eckerd employees.

Hyman Fradin Scholarship Endowment: Income from endowment awarded annually to a minority student from Rhode Island with financial need and a successful academic record (3.00 GPA and above). First preference will be given to a student wishing to major in pharmacy; if that is not possible, the support will go to a deserving student in any academic field. The recipient must also have demonstrated leadership in nonacademic settings.

Florence Champlin Hamilton Memoriol Scholarship: Income from endowment awarded annually to a student in the College of Pharmacy on the basis of scholastic ability and financial need. Selection made by the College of Pharmacy.

La Verdiere Drug Company: \$250 awarded annually to a student in third, fourth, or fifth year on the basis of satisfactory scholastic standing and financial need. Selection made by the College of Pharmacy.

Edward M. Lee Scholarship Endowment: Income from endowment awarded annually to students from the Woonsocket and North Smithfield areas. Selection made by the College of Pharmacy. Gladys N. Longo Endowed Scholarship: Income from endowment for a scholarship in pharmacy on the basis of financial need.

National Association of Chain Drug Stores, Inc., Scholarship: Annual grant for scholarships for pharmacy students on the basis of satisfactory academic standing, financial need, and a career interest in community pharmacy practice. Selection made by the College of Pharmacy.

Gertrude I. Nelson and Henry Nelson, Jr., Memorial Scholarship: Income from endowment awarded annually to a student in the College of Pharmacy with financial need.

William G. Peckham Memorial: Established by the will of Mary M. Peckham (Mrs., William G.), the scholarship provides funds to a first-year student enrolled in pharmacy and continues until graduation if merited by scholastic performance. Selection made by the College of Pharmacy.

Rhode Island College of Pharmacy: Income from endowment for scholarship in the field of pharmacy. Selection made by the College of Pharmacy.

Rhode Island Pharmaceutical Association Scholarship Endowment: Income from endowment for a scholarship in pharmacy awarded annually on the basis of financial need to third-, fourth-, or fifth-year students. Recipients selected by the Student Financial Aid Office.

Rhode Island Pharmaceutical Association: \$300 awarded annually to an upperclass student in the College of Pharmacy on the basis of scholastic ability and financial need. Selection made by the College of Pharmacy.

Rite Aid Corporation Scholorship: Grant awarded annually to students in the College of Pharmacy.

SEMPA Pharmacy Award: Endowment income from a gift of the Southeastern Massachusetts Pharmaceutical Association to a third-, fourth-, or fifth-year pharmacy student from southeastern Massachusetts. Priority to scholastic excellence above financial need. Selection made by the College of Pharmacy.

Mary C. Tafuri Memorial Scholorship: Income from endowment awarded to a pharmacy student interested in the practice of community pharmacy.

Wolter B. Thampson Memorial: Income from endowment awarded annually to a deserving student. Selection made by the College of Pharmacy.

Daniel P.N. Tsoo Memorial Scholarship: Income from endowment awarded annually to a pharmacy student.

URI Class of 1926 Scholarship in Pharmacy: Income from endowment for a scholarship in pharmacy. Recipient selected by the Dean of the College of Pharmacy and the Student Financial Aid Office. Walgreen Award: Scholarship awarded to a deserving student in or at completion of the first professional year.

Leonard R. Worthen Scholarship in Pharmacy: Income from endowment for a scholarship in pharmacy.

Heber W. Youngken, Jr., Scholarship: Awarded annually to a student in the fourth- or fifth-year class who has demonstrated outstanding service in the interests of pharmacy at the state and/or national level. Recipient selected by the College of Pharmacy.

Resource Development

Anonymous Scholarship: Income from endowment awarded annually to students in the aquaculture and fishery technology program with financial need. Preference is given to graduates of Martha's Vineyard Regional High School and then to graduates of Cape Cod High School.

John W. Atwood Memorial Scholarship: Income from endowment awarded annually to a junior or senior student in animal science programs; students to be selected by a committee on the basis of financial need, academic performance, and interest. Selection made by the Department of Fisheries, Animal and Veterinary Science.

Harriet G. Bird Memorial Scholarship (Merwin Memorial Free Clinic for Animals, Inc.): \$1,000 awardéd annually to Massachusetts residents with financial need who are majoring in animal science and technology and are interested in the welfare of animals.

Barbara Bradford Brand '30 Scholarship: Income from bequest awarded to a student in the College of Resource Development interested in researching ways to accelerate protection of the environment.

W. Berkley Carter Endowed Scholarship: Scholarships awarded annually to students majoring in urban horticulture and turfgrass management.

Joseph Choves Memorial Scholarship: Scholarship established by Chaves Gardens, Inc., to be awarded to a student in the College of Resource Development on the basis of ment.

John Samuel Clapper Memorial Scholarship: Income from endowment established by Orville O. Clapper in honor of his father, who pioneered the development of modern turf. Awards to outstanding juniors or seniors showing marked and abiding interest in turf culture. Selection made by the College of Resource Development.

Dr. James W. Cobble Memorial Scholarship: Income from endowment awarded annually to a senior, junior, or sophomore in the College of Resource Development primarily on the basis of financial need accompanied by evidence of satisfactory progress toward a degree.

Cofish International, Inc.: Grant in the amount of \$2,000 awarded to a student in the final year of the aquaculture and fishery technology program who demonstrates effort and excellence in the course of studies. Selection made by the Department of Fisheries, Animal and Veterinary Science.

College af Resource Development Scholarship for Academic Excellence: Income from endowment for scholarships in the College of Resource Development awarded on the basis of merit.

Lloyd Robert Crandall Memorial (Ashaway Line and Twine Manufacturing Company): Income from endowment awarded annually to students in the aquaculture and fishery technology program with financial need. Selection made by the College of Resource Development.

Wayne King Durfee and Bernice Anderson Durfee Aquaculture Scholarship for Academic Excellence: Awarded annually to a junior or senior who has majored in aquaculture and fishery technology for at least one year. The recipient is selected on the basis of merit, as evidenced in the past academic year, with first preference given to a student with special interest in shellfish.

Golf Course Superintendents' Association of America Scholarships: \$500 competitive scholarships awarded nationally on the basis of scholastic ability, professed interest in golf turf management, and recommendation of advisors. Selection made by the turf section of the Department of Plant Sciences.

Mabel B. Goshdigian Memoriol Dietetics Scholarship for Acodemic Excellence: Awarded to a dietetics major based on merit.

Morton and Ruth Grossman Endowment Fund: Income from endowment awarded annually to students studying for the profession of turfgrass management. Recipient will be selected by faculty in the Department of Plant Sciences who serve as advisors to students majoring in urban horticulture and turfgrass management.

*Arthur D. Jeffrey Memorial Scholarship: Income from endowment awarded to a graduate student in community planning with financial need.

Cedric C. Jennings '37 Memorial: Income from endowment available annually to students with financial need who are studying entomology or plant pathology. Selection made by the plant pathology and entymology section of the Department of Plant Sciences.

Elizabeth C. Kinney Memorial Fund: For scholarships in the College of Resource Development. Mrs. Kinney gave years of service to URI and the Kingston community.

Alice P. Mayer: Two annual awards of \$1,500 each to students with interest in agriculture, horticulture, or fishery technology who reside in Newport County. Preference to juniors and seniors. Selection made by the College of Resource Development.

William S. Moody III Memorial Endowment: Income from endowment awarded for four years to an undergraduate in the College of Resource Development. The recipient(s) will be selected by the Dean of the college on the basis of academic merit and interest in environmental issues and studies. Established in the memory of William S. Moody III, this endowment was donated by Mr. and Mrs. William S. Moody, Jr., his parents, and Mrs. William S. Moody, his widow.

Natural Resources Science Scholarship Endowment: Income from endowment for a scholarship in the Department of Natural Resources Science. Recipient must be in good academic standing, have demonstrated financial need, and be a major in natural resources science.

Al Owens Scholarship: Scholarship awarded annually to a student in the College of Resource Development based on merit.

Jean Louise Pimental '70 Memorial: Income from endowment to a student in animal science with preference to a woman from Rhode Island. Selection made by the College of Resource Development.

John E. Powell Memoriol Scholarship: Income from endowment available annually to students on basis of worth and need. Selection made by the College of Resource Development.

Providence Gas Environmental Scholarship: Awarded to students preparing for careers in environmental management and residing in the household of a Providence Gas customer.

Ralston-Purina: \$650 award to an outstanding student with professional interest in food science. Selection is based on scholarship, leadership, character, citizenship, potential, and need. Selection by Ralston-Purina from applications recommended by the college.

Rhode Island Dietetic Association Endowed Scholarship: Awarded annually to a Rhode Island resident majoring in dietetics, based on merit and financial

Rhode Island Golf Course Superintendents' Association Scholarship: \$200 awarded annually to a student studying for the profession of turfgrass management who has an expressed interest in golf course maintenance. Selection made by the turf section of the Department of Plant Sciences.

Rhode Island Nurserymen's Award: Awarded to the student who scores the highest in a departmental plant identification contest.

Rhode Island Nurserymen's Association Scholarship: Awarded to a student majoring in ornamental horticulture with the highest cumulative quality point average.

Dr. Richard Skogley Scholarship Endowment: Income from endowment for a scholarship in the area of plant sciences. Recipient selected by the Department of Plant Sciences.

Society of Soil Scientists of Southern New England Scholarship: Awarded to a student majoring in soil science on the basis of scholarship, extracurricular activities, character, and need. The recipient must have completed six credits in soil science.

South County Garden Club. Susan B. Wilson Scholarship: Awarded to a student in landscape architecture.

Southern Rhode Island Soil Conservation District Scholarship: \$500 awarded to a junior or senior with professional interest in soil conservation or a related area. Selection made by a committee of soils faculty and district representatives, based on scholarship, experience in soil science, extracurricular activities, character, and attitude.

Karen Volk Memorial Scholarship Fund: Income from endowment awarded on the basis of need to a female freshman in the Department of Fisheries, Animal and Veterinary Science.

Wantaknowhow Garden Club: Scholarship awarded annually to a student in resource development.

SPECIAL AWARDS

* Academy of American Poets Prize Program: Income from the Nancy Potter Scholarship Fund endows two \$100 prizes to be awarded each year by the Academy of American Poets.

Dennis W. Callaghan Memorial Award in Management: Income from endowment awarded to the outstanding senior in management in the College of Business Administration. Selection made by the College of Business Administration.

Dr. David J. Chronley Endowed Fund in Chemical Engineering: Annual creativity awards for junior or senior undergraduate students in chemical engineering and need-based undergraduate scholarships in chemical engineering. Awards and scholarships awarded at the discretion of the department chair-

- * James Corless Prize in Marine Chemistry: Income from endowment for an award in water chemistry given annually if there is a worthy student.
- * Robert H. '35 and Marjorie P. '36 Fillmore Memorial Scholarship: Income from endowment fund, established by Judith A. Fillmore in memory of her mother and father, awarded to an undergraduate or graduate student on the basis of good scholastic standing who demonstrates financial need and is enrolled in a URI ocean science program. First consideration is given to sons and daughters of the URI Washington Alumni Club, Washington, D.C.

* John J. Fisher Memorial Endowment Award: Income from endowment for an annual award in geology to a graduate assistant on the basis of service to the Department of Geology and a strong academic record.

John B. Froleigh Prizes in Mathematics: Income from endowment awarded annually for prizes to undergraduates for excellence in mathematics. Selection made by the Department of Mathematics.

Peter M. Galanti Award: Income from endowment awarded annually to a deserving student in business administration.

* Graduate Library School Scholarship: Income from endowment awarded annually to a student enrolled in the Graduate Library and Information Studies program.

Elizabeth Holmes Outstanding Athlete Award: Income from endowment for two awards presented annually to outstanding athletes, one male and one female, who possess good academic averages and exemplify the character, sportsmanship, and distinguished qualities URI desires in its athletes. Recipients selected from recommendations made by coaches, with final selection made by the Holmes family.

Joseph Waite Ince Prize in Chemistry: Income from endowment for a prize awarded annually to the most accomplished and promising chemistry student.

David Ketner Memorial: Income from endowment for a prize(s) to art students established in the memory of David D. Ketner, former URI professor of art.

- * Thomas and Kathy McNiff Graduate Student Endowment: Income from endowment awarded annually to a student in the marine sciences. Recipient selected by the Student Financial Aid Office.
- *Peter Merenda Prize for Excellence in Statistics and Research Methodology: \$1,500 to a finishing Ph.D. student in the Department of Psychology for excellent academic performance.

Professor William D. Metz Prize in History: Income from endowment awarded annually to a graduating senior for excellence in history.

- *L. Douglas Nolan '52 Academic Achievement in Science Award: Income from endowment awarded annually to a graduate student who excels in one of the natural sciences. Selection made by the Dean of the Graduate School.
- * William Potter Prizes in Chemistry: Awarded to Ph.D. students in pharmacy on the basis of academic achievement in chemistry.

Rhode Island Association of Advertising Agencies Endowed Award: Income from endowment for an award to an outstanding advertising and/or marketing student in the College of Business Administration.

Rhode Island Nurserymen's Association Award: \$150 awarded annually to a student in an advanced course in landscape design who attains the highest score in competitive examination in plant identification. Award presented at the association's annual spring meeting. Selection made by the College of Resource Development.

Rhode Island Nurserymen's Association Scholarship: \$150 awarded annually to a student who has completed at least five of the eight professional courses specified in ornamental horticulture and has attained the highest cumulative quality point average. Recipient selected by Associate Dean for Instruction. Award presented at the association's spring meeting.

Rhode Island Tuberculosis and Respiratory Disease Association Award: \$1,000 awarded annually in honor of the association's former president, Harry L. Gardner, to a senior accepted by an accredited medical school. Based on need. Apply to chairperson of Faculty Premedical Advisory Committee.

Italo and Mary Ronzia Award: Income from endowment for an award in Italian language studies. Grace B. Sherrer Hanars Awards: Income from endowment awarded annually as prizes to outstanding undergraduates enrolled in the Honors Program.

Leonard Eckerman Smith Memorial: Income from endowment awarded to students at the University with a major interest in public speaking.

Ralph Thampson Award in Chemical Engineering: Income from endowment awarded annually to the student in chemical engineering who demonstrates the greatest increase in quality point average from the end of the freshman year to the end of the junior year.

Richard Dawson Wood Memoriol Award for Excellence in Botany: Income from endowment fund, awarded on the basis of scholarship, character, academic integrity, and intellectual enthusiasm, to a senior entering graduate studies in botany. In addition, an independent research paper on a project previously discussed with a faculty member in botany must be submitted by April 30 of the senior year.

Dr. Borbara Allen Woods Memorial Awards for Excellence in German Studies: Students selected by faculty members in the German section.

URI CORNERSTONES

THE
UNIVERSITY
OF RHODE
ISLAND IS A
PRINCIPLED
COMMUNITY
GUIDED BY
VALUES.
AS MEMBERS
OF THIS
COMMUNITY,
VE SUBSCRIBE

WE SUBSCRIBE
TO THE
FOLLOWING
PRINCIPLES
WHICH
FORM THE
FOUNDATION
OF OUR
ENDEAVORS.

- WE PURSUE KNOWLEDGE WITH HONESTY, INTEGRITY, AND COURAGE.
- WE PROMOTE INDEPENDENT CHOICE, INTELLECTUAL CURIOSITY, OPEN-MINDEDNESS, AND FREE EXPRESSION.
- WE RESPECT THE RIGHTS AND DIGNITY OF EACH INDIVIDUAL AND GROUP. WE REJECT PREJUDICE AND INTOLERANCE, AND WE WORK TO UNDERSTAND DIFFERENCES.
- WE ACCEPT PERSONAL RESPONSIBILITY FOR OUR ACTIONS AND THEIR CONSEQUENCES.
- WE ACTIVELY COOPERATE TO IMPROVE THE UNIVERSITY, THE STATE OF RHODE ISLAND, AND THE GLOBAL COMMUNITY BEYOND OUR BORDERS.
- WE STRIVE TO BE A COMMUNITY WHERE THE ENVIRON-MENT AND PROPERTY ARE TREATED RESPECTFULLY.
- WE SEEK TO CREATE AND MAINTAIN AN ENVIRONMENT CONDUCIVE TO PERSONAL HEALTH AND WELLNESS.
- WE WORK TO DEVELOP SKILLS WHICH PROMOTE LIFELONG LEARNING, LEADERSHIP, AND SERVICE.

DEVELOPED BY THE QUALITY OF STUDENT LIFE COMMITTEE AND ENDORSED BY THE STUDENT SENATE AND THE GRADUATE STUDENT ASSOCIATION, UNIVERSITY OF RHODE ISLAND, 1994.

Degree of Doctor of Philosophy

Child Development Center

Residence Halls Hope Dining Hall

Hutchinson, Peck, and Adams

authorized by Board of Trustees

Summary of Enrollment		Historical Outline	1934	Asa Sweet and Edward Sweet lands
Spring Term 1994				purchased
		1888 State Agricultural School established	1936	Narragansett Marine Laboratory
(Nonduplicated)		Agricultural Experiment Station		Animal Husbandry Building
Undergraduate Students by Colleg	1e.	established		Eleanor Roosevelt Hall
Kingston Campus	,~,	Watson farm purchased as site		Quinn Hall
-	1.047	1889 Taft Laboratory		Central Heating Plant
Arts and Sciences	1,967	John H. Washburn appointed principa		Peckham farm purchased
Business Administration	605	1890 South Hall		Green Hall
Engineering	449	1891 College Hali		Meade Field
Human Science and Services	961	Ladd Laboratory	1939	Board of Trustees of State Colleges
Nursing	302	1892 Rhode Island College of Agriculture		created
Pharmacy	346	and Mechanic Arts founded		John Barlow, Acting President
Resource Development	547	May 19		Carl R. Woodward, President
University College	3,383	John H. Washburn, President	1942	War-accelerated program with summe
Unassigned	10	1894 First class graduated		term initiated
Nondegree (Credit)	218	Alumni Association formed		Reorganization of School of Science
Total (Male 4,227; Female 4,561)	8,788	1895 College Hall burned and rebuilt as		and Business into separate school
	-,	Davis Hall		of Science and of Business
Graduate Students, Kingston Cam	nus	1897 Lippitt Hall		Administration
		First Grist yearbook published		Engineering Experiment Station
Degree	1,693	1898 Preparatory school established		established
Degree (Continuous Registration)	56	1902 Horner J. Wheeler, Acting President		Industrial Extension Division established
Nondegree (Continuing)	81	1903 Kenyon L. Butterfield, President	1943	Army Specialized Training Unit
Postbaccalaureate (Temporary)	260	1904 Extension Department organized		assigned to college
Total (Male 920; Female 1,170)	2,090	1906 Howard Edwards, President		Second Peckham farm purchased
		Greenhouse and Horticultural Buildin	_	Industrial Extension Division replaced
TOTAL ENROLLMENT		1907 Master's degree awarded for the first		by Division of General College
KINGSTON CAMPUS	10,878	time		Extension
		1908 Preparatory school discontinued		War-accelerated program ended in
		The Beacon (student newspaper)		September
Undergraduate Students,		established as a monthly	1945	Degree program in nursing establishe
College of Continuing Education		Rho Iota Kappa (first fraternity)		Sherman farm acquired
•	021	1909 East Hall		Quonset hut colony erected as
Degree	931	By charter amendment, name chang	ea	emergency housing project
Nondegree (Credit)	845	to Rhode island State College		School of Home Economics establishe
		1910 Theta Chi (first national fraternity)		School of Arts and Sciences establishe
Graduate Students,		1912 First fraternity house (Beta Phi, now I	ฑเ	Bachelor of Arts degree authorized by
College of Continuing Education		Gamma Delta)	1010	Board of Trustees
Degree	326	1913 Ranger Hall	1949	Bachelor of Arts degree awarded for
Degree (Continuous Registration)	.0	Chapter of Phi Kappa Phi, national		first time at June Commencemer
Nondegree (Continuing)	11	honor society		Butterfield and Bressler Halls
Postbaccalaureate (Temporary)	719	1918 Academic work suspended April 28	1951	Name changed to University of Rhod
· ottoucoulaureace (remperary)	, , ,	Student Army Training Corps		Island by act of General Assembly
TOTAL ENROLLMENT		1919 Academic work resumed January 2		Pastore Chemical Laboratory
CONTINUING EDUCATION	2,832	1921 Washburn Hall	1953	Chapter of Sigma Xi, national scientifi
CONTINUING EDUCATION	2,032	1924 Home Management House		honor society
CRAND TOTAL	12 710	1928 Memorial Gateway		Frank W. Keaney Gymnasium
GRAND TOTAL	13,710	Bliss Hall		Laboratories for Scientific Criminal
		Edwards Hall	105	Investigation established
		Rodman Hall		Rhode Island Memorial Union
		East Farm acquired	195/	College of Pharmacy established
		1930 John Barlow, Acting President	1050	URI Foundation established
		1931 Raymond G. Bressler, President	1958	Francis H. Hom, President

President's House

1932 Reorganization of college: Schools of

Home Economics

Engineering, of Science and

Business, and of Agriculture and

- 1959 Woodward Hall Administration Building Computer Laboratory established Potter, Infirmary Wales and Kelley Halls
- 1960 Fish Oceanographic Laboratory Independence Hall Davis Hall and East Hall remodeled Two-year program in dental hygiene established
 - Bureau of Government Research established

Faculty Senate established

- 1961 Graduate School of Oceanography Tucker, Merrow, and Browning Halls Gilbreth Hall
- 1962 Crawford Hall W. Alton Jones Campus acquired Research ship *Trident* commissioned
- 1963 Tyler Hall Graduate Library School established Weldin and Barlow Halls
- 1964 Fogarty Health Science Building Watson House restored
- 1965 Addition to the Memorial Union
 University Library
 Law of the Sea Institute established
 Sherman Maintenance Building
 Bachelor of Fine Arts and Bachelor of
 Music degrees authorized
 Research Center in Business and
 Economics established
 - Water Resources Research Center established
- 1966 Aldrich, Burnside, Coddington, Dorr, Ellery, and Hopkins Halls, and Roger Williams Center Justin S. Morrill Science Building Fine Arts Center (Phase I) Institute of Environmental Biology established
- 1967 Two-year program in commercial fisheries established Ballentine Hall

F. Don James, Acting President

- 1968 Kelley Hall Research Annex
 Pell Marine Science Library
 Horn Laboratory
 First Sea Grant received
 Werner A. Baum, President
 New England Marine Resources
 Information Program established
- 1969 Home Management Center Curriculum Research and Development Center established Heathman Hall Faculty Center

established

Dental hygiene bachelor's program

- International Center for Marine Resource Development established 1970 Fayerweather Hall
- Gorham Hall
 Consortium for the Development of
 Technology established

Marine Advisory Service established

- 1971 Tootell Physical Education Center Fine Arts Center (Phase II) Conference Center, Jones Campus Administrative Services Center Board of Regents for Education (Education Act of 1969) takes over direction of higher education
 - URI named one of first four Sea Grant Colleges and designated National Sea Grant Depository
- 1972 Biological Sciences Building
 Chafee Social Science Building
 University College established
 Coastal Resources Center established
 Graduate apartment complex
- 1973 William R. Ferrante, Acting President Research Aquarium Science Research and Nature Preserve Buildings, Jones Campus Community Planning Building
- 1974 Frank Newman, President Laboratory for the Study of Information Science founded
- 1975 Addition to the University Library building
- 1976 Research ship Endeavor commissioned
- 1977 Bachelor of General Studies established White Hall

Chapter of Phi Beta Kappa, national liberal arts honor society

Center for Ocean Management Studies established

Center for Energy Study established Regional Coastal Information Center established

- 1978 College of Human Science and Services succeeds College of Home Ecoromics
 - Norman D. Watkins Laboratory
- 1979 Information Center
- 1980 Institute for Human Science and Services established
 - Robotics Research Center
- 1981 Center for Atmospheric Chemistry established
 - Division of University Extension name changed to College of Continuing Education
 - Board of Governors for Higher Education established by act of General Assembly

- 1983 Marine Resources Building Small Business Development Center established Edward D. Eddy, President
- 1984 Labor Research Center established Food Science and Nutrition Research Center
- 1985 Addition to Pastore Chemical Laboratory

Applied Engineering Laboratory

- 1986 Anatomy Laboratory
 Biotechnology Center established
 Division of Marine Resources name
 changed to Office of Marine
 Programs
- 1988 Institute for International Business established
- 1989 Fisheries and Marine Technology Building
 - Pacific-Basin Capital Markets Research Center established

Research Institute for Telecommunications and Information Marketing established

- 1990 W. Alton Jones Campus Environmental Education Center designated a National Center for Environmental Education
- 1991 Robert L. Carothers, President
 Mackal Field House
 Library addition
 Social Sciences Research Center
 Engineering Building and addition to
 Kirk Laboratory
 Atmospheric Chemistry Center,
 Narragansett Bay Campus
- 1992 URI Centennial Celebration
 New Sailing Pavilion, Point Judith Pond
 Addition to Memorial Union
 Restructuring of Keaney Gymnasium
 Residential and Conference Lodge,
 Jones Campus
- 1993 Dining Services Distribution Center Century Walk installed on the Quadrangle
- 1995 URI designated an Urban Grant Institution

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